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ABSTRACT

These proceedings include the following papers: "An Assessment of the National FFA Public Service Announcement Program" (Sutphin, Dillon, and Rush); "Educational Objectives and Administrative Criteria for the National FFA Contest Program" (Smith and Kahler); "A National Profile of Agricultural Teacher Educators and State Supervisors of Vocational Agriculture by MBTI Preference Type" (Foster and Horner); "Discussion of Research Reports on National Perspectives" (Martin); "Mathematical Problem-solving Skills of High School Vocational Agriculture Students and Undergraduate Students in Agricultural Education" (Gliem and Warmbrod); "Technical Agriculture Knowledge Level Attained by Students Enrolled in Vocational Agriculture II Classes" (Kotrlik, Parton, and Lelle); "Readability and Student Understanding in Vocational Agriculture" (Zurbrick); "Student Performance in Vocational Agriculture--A Critique of Research" (Brown); "A National Study of Recommended Curricula for Extension Education Methods Classes and Student Internship Programs" (Legacy and Wells); "The Extent of Burnout among Faculty in Agriculture" (Newcomb and Clark); "An Assessment of Motivational Factors Affecting College of Agriculture Faculty Involvement in International Development Acitivites" (Jones and Crawford); "Factors Associated with Developing an Understanding of SOEP as Perceived by Oregon Vocational Agriculture Teachers" (Herren and Cole); "Factors Limiting Vo Ag Student Participation in SOE Programs in Nebraska" (Foster); "The Relationship between Characteristics of Colorado's American Farmer Degree Recipients from 1968 to 1977 and Their Current Occupational Status" (Gartin and Knight); "The Relationship between Job Satisfaction and Teacher Performance of Vocational Agriculture Teachers" (Grady and Burnett); "Professional Philosophy, Teacher Beliefs, and Teacher Effectiveness: Is There a Relationship?" (Rush and Crunkilton); "Attitudes of Ohio Vocational Agriculture Teachers toward Summer Programs" (Short and Miller); "Discussion of Research Reports on Teacher Perspectives" (Peters); "Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and National Resources Education" (Cheek and McGhee); "Crop Production Skills Possessed and Taught by Vocational Agriculture Teachers in Illinois" (Osborne); "Vocational Agriculture Competencies and Sex Equity in Oregon" (Cole); "Vocational Agriculture Teachers' Perceptions of Young/Adult Education Programs in Agriculture" (Haynes and Burnett); "Attitudes of Superintendents of Ohio Comprehensive High Schools toward Adult Programs" (Miller and Krill); "Perceptions of Agricultural Education Programs: Differences among Satisfied/Dissatisfied Students" (Strickland and Elson); "Early Field-based Experience Programs and Attitudes of Preservice Teachers" (Deeds and Barrick); "Analysis of the Inservice Needs of Beginning Vocational Agriculture Teachers" (Birkenholz and Harbstreit); "Vocational Agriculture Entry-Year Teachers' and Entry-Year Assistance Committee Members' Perceptions of the Oklahoma Entry-Year Assistance Program (HB1706)" (Finley and Barbee); "Meeting Teacher Needs: A Discussion of Research" (Arrington); "Where Are You When We Need You, Rufus W. Stimson?" (Moore); "Attitudes toward and Utilization of Cognitive Skill Development among Agricultural Education Faculty in the United States" (Jones and Williams); "Preparing Effective Vocational Agriculture Teachers: A Comparison of Land Grant and Non-Land Grant Universities" (Asiabaka and Moore); "Teacher Preparation in Agricultural Education: A Discussion of Research Reports" (Mannebach); "Readjustment and Life Satisfaction of International Students in Agriculture Returning Home to a Developing Country" (Dreisbach, Christiansen, Herring, and Briers); and "Development and Experimental Evaluation of a Microcomputer-based Software Package for Recordkeeping in SOF" (Wood). Critiques of several papers are also provided. (MN)

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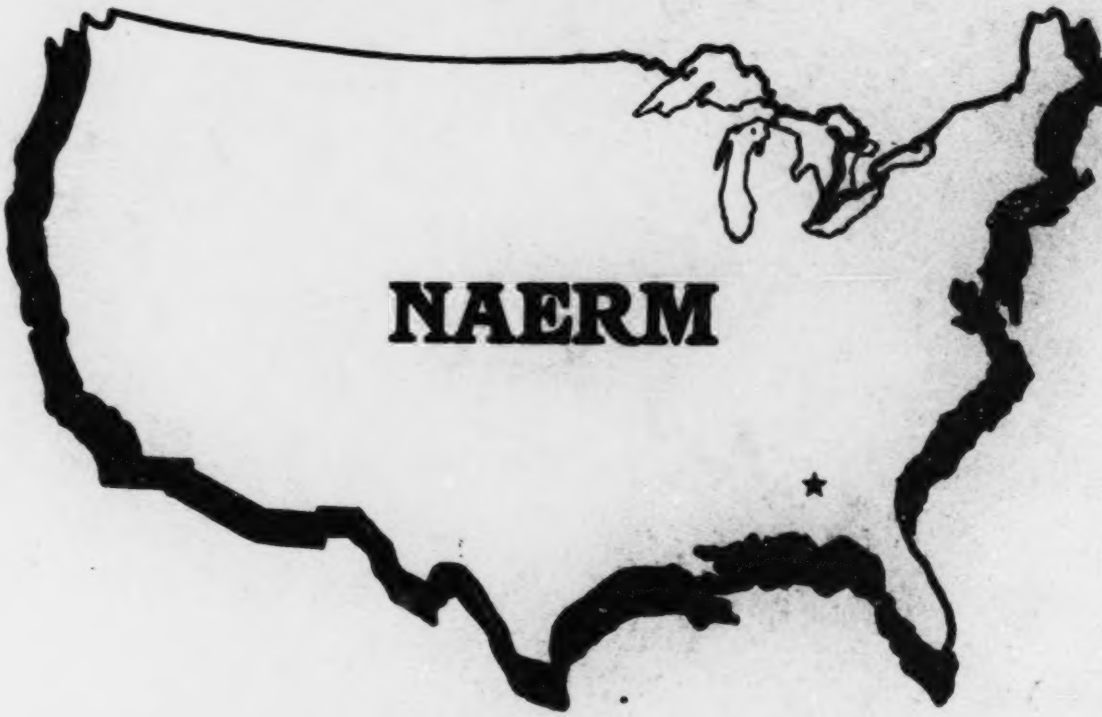
Proceedings of the

Twelfth Annual National Agricultural Education Research Meeting



December 6, 1985
The Atlanta Hilton
Atlanta, Georgia

CE0 42900

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FOREWORD

Research is essential to progress in any profession. This is the basic tenet under which professionals in Agricultural Education launched the regional research conferences and, more recently, the National Research Meeting.

The National Agricultural Education Research Meeting (NAERM) is unique in it's field; no other vocational service area has such a comprehensive meeting dedicated to research and featuring the best studies from across the nation. The 1985 NAERM is the twelth in a distinguished series. Previous meetings were:

Number	Year	Location	Name and Institution of Chairperson
1	1974	New Orleans, LA	Hollie Thomas, Florida State
2	1975	Anaheim, CA	Hollie Thomas, Florida State
3	1976	Houston, TX	Glen Shinn, Mississippi State
4	1977	Atlantic City, NJ	William Richardson, Purdue
5	1978	Dallas, TX	Bennie Byler, Mississippi State
6	1979	Anaheim, CA	Ronald Brown, Mississippi State
7	1980	New Orleans, LA	L. H. Newcomb, Ohio State
8	1981	Atlanta, GA	Maynard Iverson, North Carolina State
9	1982	St. Louis, MO	Dale Oliver, VPI&SU
10	1983	Anaheim, CA	Paul R. Vaughn, New Mexico State
11	1984	New Orleans, LA	Jimmy G. Cheek, University of Florida

The expectation of quality for the 1985 NAERM was set by those who conducted the previous meetings. I am grateful to a number of individuals who helped make this year's meeting successful: to Jimmy Cheek, 1984 NAERM Chairman, who provided an outstanding example to follow; to Jerry Peters, Chairperson, AVA Agricultural Education Division (AED) Research Committee whose assistance was essential in conducting the program and compiling these proceedings; to the members of the AVA/AED Research Committee for sponsoring and assisting in conducting the meeting; to Sherri Griffy, Agricultural Education, University of Missouri, for her capable assistance in handling the work associated with the conference; to a special anonymous friend who provided the Proceedings covers; to Alan Kahler, Chairperson Elect, NAERM, who coordinated the assembling of the Proceedings; to the Conference Secretary, Bob Birkenholz, who organized the conference registration; to Curt Corbin, Program Chairperson, AVA/AED, who coordinated the overall program planning; to the participants in the program--chairpersons, facilitators, discussants and speakers--whose efforts resulted in an excellent conference; and to all members of the profession who submitted proposals and permitted their work to be judged by their peers. Twenty-seven of the 79 proposals submitted were selected for a 34 percent acceptance rate.

A special word of thanks is due the following individuals who served as referees and whose work provided the basis for the objective selection of presenters:

Larry R. Arrington, University of Florida
Lloyd Bell, University of Nebraska
Ronald A. Brown, Mississippi State University
Phil Buriak, Illinois State University
James E. Diamond, The Pennsylvania State University
Charles E. Drawbaugh, Rutgers University
Jan Henderson, The Ohio State University
Ivar D. Holmberg, University of Maryland - Eastern Shore
Alan A. Kahler, Iowa State University
Jim D. Lee, North Central Area Vocational School, Bethany, MO
Richard E. Linhardt, University of Missouri-Columbia
Alfred J. Mannebach, University of Connecticut
Robert A. Martin, Iowa State University
J. Dale Oliver, Virginia Polytechnic Institute and State University
Jerry L. Peters, Purdue University
Fred W. Reneau, Southern Illinois University
Bobby K. Waddell, Vocational Agriculture, Appomattox, VA
J. Robert Warmbrod, The Ohio State University

I hope that the papers from the 1985 NAERM will prove useful to all who receive them and that all presenters will submit their work for possible publication in a journal. It is time to begin preparing for the 1986 NAERM, and I hope that many of you will submit paper proposals for consideration to Dr. Alan Kahler, Iowa State University. Any suggestions you may have for improvement of future meetings will be appreciated.

Bob R. Stewart, Chairman
1985 National Agricultural
Education Research Meeting

TWELFTH ANNUAL
NATIONAL AGRICULTURAL EDUCATION
RESEARCH MEETING (NAERM)

December 6, 1985
The Atlanta Hilton
Atlanta, Georgia

7:45-8:15 a.m.	National Agricultural Education Research Meeting Registration: Robert J. Birkenholz, University of Missouri-Columbia
8:15-8:30 a.m.	NAERM First Session, Gwinnett/DeKalb Room Topic: Orientation and Introductions Chairperson: Bob R. Stewart, University of Missouri-Columbia Facilitator: Jimmy G. Cheek, University of Florida
8:30-10:00 a.m.	NAERM Second Session - Concurrent Session A, Fulton Room Theme: National Perspectives Topic I: An Assessment of the National FFA Public Service Announcement Program Speakers: Dean Sutphin, Cornell, Mike Rush, The Pennsylvania State University, Roy Dillon, University of Nebraska Topic II: Educational Objectives and Administrative Criteria for the National FFA Contest Program Speakers: Mack W. Smith, University of Idaho, Alan A. Kahler, Iowa State University Topic III: A National Profile of Agricultural Teacher Educators and State Supervisors of Vocational Agriculture by MBTI Preference Type Speakers: Richard M. Foster, James T. Horner, University of Nebraska Chairperson: Phil Buriak, Illinois State University Facilitator: Gary E. Briers, Texas A&M University

Discussant: Robert A. Martin, Iowa State University

8:30-10:00 a.m. NAERM Second Session - Concurrent Session B, Cobb Room

Theme: Teaching Secondary Students

Topic I: Mathematical Problem-Solving Skills of High School Vocational Agriculture Students and Undergraduate Students in Agricultural Education

Speakers: Joe A. Gliem, J. Robert Warmbrod, The Ohio State University

Topic II: Technical Agriculture Knowledge Level Attained by Students Enrolled in Vocational Agriculture II Classes

Speakers: Joe W. Kotrlik, Gaylon Parton, Mark Lelle, Louisiana State University

Topic III: Readability and Student Understanding in Vocational Agriculture

Speaker: Phillip R. Zurbrick, University of Arizona

Chairperson: Fred Reneau, Southern Illinois University

Facilitator: James H. Mortensen, The Pennsylvania State University

Discussant: Ronald A. Brown, Mississippi State University

8:30-10:00 a.m. NAERM Second Session - Concurrent Session C, Paulding Room

Theme: University Teaching

Topic I: A National Study of Recommended Curricula for Extension Education Methods Classes and Student Internship Programs

Speakers: Jim Legacy, Joe Wells, Southern Illinois University

Topic II: Extent of Burnout of Faculty in Agriculture

Speakers: L. H. Newcomb, The Ohio State University, Richard Clark, The Pennsylvania State University

Topic III: An Assessment of Motivational Factors Affecting College of Agriculture Faculty Interest in International Development Activities

Speakers: Stephen P. Jones, Harold Crawford, Iowa State University

Chairperson: Glen C. Shinn, Mississippi State University

Facilitator: John Parmley, Kansas State University

Discussant: James E. Diamond, The Pennsylvania State University

10:00-10:15 a.m. NAERM Refreshment Break, Gwinnett/DeKalb Room

10:15-11:45 a.m. NAERM Third Session - Concurrent Session D, Fulton Room

Theme: Supervised Occupational Experience Programs

Topic I: Factors Associated With Developing an Understanding of SOEP as Perceived by Oregon Vocational Agriculture Teachers

Speakers: Ray Herren, Lee Cole, Oregon State University

Topic II: Factors Affecting Vo Ag Student Participation in SOE Programs in Nebraska

Speaker: Richard M. Foster, University of Nebraska

Topic III: The Relationship Between Characteristics of Colorado's American Farmer Degree Recipients from 1968 to 1977 and Their Current Occupational Status

Speakers: Stacy A. Gartin, West Virginia University, James A. Knight, J. Robert Warmbrod, The Ohio State University

Chairperson: Ivar D. Holmberg, University of Maryland - Eastern Shore

Facilitator: James Leising, University of California - Davis

Discussant: Richard E. Linhardt, University of Missouri-Columbia

10:15-11:45 a.m. NAERM Third Session - Concurrent Session E, Cobb Room

Theme: Teacher Perspectives

Topic I: The Relationship Between Job Satisfaction and Teacher Performance of Vocational Agriculture Teachers

Speakers: Thomas L. Grady, University of Wisconsin-Madison, Michael F. Burnett, Louisiana State University

Topic II: Professional Philosophy, Teacher Beliefs, and Teacher Effectiveness: Is There A Relationship?

Speakers: Michael G. Rush, The Pennsylvania State University, John Crunkilton, Virginia Polytechnic Institute and State University

Topic III: Attitudes of Ohio Vocational Agriculture Teachers Toward Summer Programs

Speakers: Gary E. Short, Larry E. Miller, The Ohio State University

Chairperson: James P. Key, Oklahoma State University

Facilitator: Samuel C. Ricketts, Middle Tennessee State University

Discussant: Jerry L. Peters, Purdue University

10:15-11:45 a.m. NAERM Third Session - Concurrent Session F, Paulding Room

Theme: Competencies in Agriculture

Topic I: Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and Natural Resources Education

Speakers: Jimmy G. Cheek, Max B. McGhee, University of Florida

Topic II: Crop Production Skills Possessed and Taught by Vocational Agriculture Teachers in Illinois

Speaker: Ed Osborne, University of Illinois

Topic III: Vocational Agriculture Competencies and Sex-Equity in Oregon

Speaker: Richard L. Cole, Oregon State University

Chairperson: John F. Thompson, University of Wisconsin-Madison

Facilitator: David G. Craig, University of Tennessee

Discussant: Jan Henderson, The Ohio State University

1:00-2:30 p.m. NAERM Fourth Session - Concurrent Session G, Fulton Room

Theme: Program Perceptions

Topic I: Vocational Agriculture Teachers' Perceptions of Young/Adult Education Programs in Agriculture

Speakers: Michael F. Burnett, Douglas M. Haynes, Louisiana State University

Topic II: Superintendents' Attitudes Toward Adult Vocational Agriculture in Ohio's Comprehensive High Schools

Speakers: Larry E. Miller, Thomas L. Krill, The Ohio State University

Topic III: Perceptions of Agricultural Education Programs: Differences Among Satisfied/Dissatisfied Students

Speakers: Deborah C. Strickland, Donald E. Elson, Virginia Polytechnic Institute and State University

Chairperson: Don Priebe, North Dakota State University

Facilitator: Lloyd Bell, University of Nebraska

Discussant: J. Dale Oliver, Virginia Polytechnic Institute and State University

1:00-2:30 p.m. NAERM Fourth Session - Concurrent Session H, Cobb Room

Theme: Meeting Teacher Needs

Topic I: Early Field-Based Experience Programs and Attitudes of Pre-Service Teachers

Speakers: Jacquelyn Deeds, Mississippi State University, R. Kirby Barrick, The Ohio State University

Topic II: Analysis of the Inservice Needs of Beginning Vocational Agriculture Teachers

Speakers: Robert J. Birkenholz, Steven R. Harbstreit, University of Missouri-Columbia

Topic III: Vocational Agriculture Entry-Year Teachers' and Entry-Year Assistance Committee Members' Perceptions of the Oklahoma Entry-Year Assistance Program (HB1706)

Speakers: Eddy Finley, Jerry Barbee, Oklahoma State University

Chairperson: Don R. Herring, Texas A&M University

Facilitator: Dennis Scanlon, The Pennsylvania State University

Discussant: Larry R. Arrington, University of Florida

1:00-2:30 p.m. NAERM Fourth Session - Concurrent Session I, Paulding Room

Theme: Teacher Preparation

Topic I: Where Are you When We Need You, Rufus W. Stimson?

Speaker: Gary E. Moore, Louisiana State University

Topic II: Attitudes Toward and Utilization of Cognitive Skill Development Among Agricultural Education Faculty in the United States

Speakers: Rose L. Jones, University of Maryland-College Park, David L. Williams, Iowa State University

Topic III: Preparing Effective Vocational Agriculture Teachers: A Comparison of Graduates of Land-Grant and Non-Land-Grant Universities

Speakers: C. Cyril Asiabaka, Gary E. Moore, Louisiana State University

Chairperson: Stanley R. Burke, Virginia Polytechnic Institute and State University

Facilitator: Elmer L. Cooper, University of Maryland-College Park

Discussant: Alfred J. Mannebach, University of Connecticut

2:30-2:45 p.m. NAERM Refreshment Break, Gwinnett/DeKalb Room

2:45-3:45 p.m. NAERM Fifth Session, Gwinnett/DeKalb Room

Theme: The National Study

Topic: A Progress Report

Speaker: Charles Benbrook, Executive Director, Board on Agriculture, National Research Council, Washington, D.C.

Chairperson: Alan A. Kahler, Iowa State University

Facilitators: William G. Camp, Virginia Polytechnic Institute and State University, Jasper S. Lee, Mississippi State University

Alternate Paper

Topic: Readjustment and Life Satisfaction of International Students in Agriculture Returning Home to a Developing Country

Authors: Peter Dreisbach, Western Kentucky University, James E. Christiansen, Don R. Herring, Gary E. Briers, Texas A&M University

Conference Chairperson: Bob R. Stewart, University of Missouri-Columbia

Chairperson Elect: Alan A. Kahler, Iowa State University

Conference Secretary: Robert J. Birkenholz, University of Missouri-Columbia

AN ASSESSMENT OF THE NATIONAL FFA PUBLIC SERVICE ANNOUNCEMENT PROGRAM

Dean Sutphin
Assistant Professor of
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INTRODUCTION

Public relations programs are needed to inform the American public about the industry of agriculture. Kirts (1983) noted that the general public often thinks of American Agriculture as a farming enterprise which involves only a few people who need limited training to conduct their chosen occupation. Yet agriculture continues to be the number one industry in the United States in terms of gross sales of commodities and number of persons in the work force (U.S. Department of Agriculture, 1983). Consequently the industry has diverse opportunities for employment, but demands a work force with specialized training at the skilled, semiskilled and professional levels (Groecker, 1980). High quality educational programs are needed to prepare a work force which can adequately meet challenges. The movement away from an agrarian society contributes to a lack of knowledge on the part of the general public and a poor image of secondary agricultural education programs (Kirts, 1983; Miller, 1983). Students and parents need to become aware of the educational opportunities and careers in agriculture.

In response to the need to publicize vocational agriculture, FFA and the agriculture industry, the National Future Farmers of America initiated a Public Service Announcements (PSA) program in 1983. The major thrust of the program included 10, 20, 30 and 60 second television announcements about American agriculture, agricultural education and the FFA, featuring TV personality Eddie Albert. All four PSAs were put on a single video tape and 16mm film so TV stations could use the length of announcement that best fitted their programming schedule. It was thought that film segments of different lengths and content would increase the use and effectiveness of the announcements.

A similar public relations program was being planned at about the same time by the Public Information Committee of the American Vocational Association's Agricultural Education Division. The Public Information Committee decided to discontinue this duplicative effort, and, instead, cooperate with the National FFA by responding to a request for a research team to evaluate the effectiveness of the PSA program and make recommendations for revisions. This information was also perceived to be useful for other public relations activities.

OBJECTIVES

The purpose of this study was to evaluate the effectiveness of the FFA filmed Public Service Announcements (PSA) and make recommendations for future use of PSA programs about agriculture, vocational agriculture education and the FFA. The research objectives were to:

1. Assess the effectiveness of the FFA filmed PSA at the National level.
2. Compare the effectiveness of the FFA filmed PSA among the Southern, Eastern, Central and Western FFA Regions.
3. Compare agriculture teacher (respondents) general effectiveness ratings of PSA by the independent variables (a) number of PSA's viewed (1, 2, 3 and 4) and (b) different lengths of PSA's viewed (10, 20, 30, or 60 seconds). Two research hypotheses were formulated for this objective.
   a. Effectiveness ratings by agriculture teachers will increase as the length of PSA's viewed increases.
   b. Agriculture teachers effectiveness ratings will increase as the number of types of PSA viewed increase.
4. Compare agriculture teacher ratings of PSA's among National FFA regions with regard to (a) balance between vo-ag and FFA; (b) the scope of agriculture represented; (c) positive impact; and, (d) recommendation for continued use with levels of the independent variables "length" and "frequency" of PSA's viewed.
5. Identify recommendations for future use of FFA filmed Public Service Announcements.

PROCEDURE

The methodology used in this study was descriptive correlational. Data were collected using a mailed questionnaire. The type of data collected was determined by the research project team and National FFA Center Staff based on purposes of the PSA and information needed to improve the program. Content validity for the instrument was established a priori by using a panel of experts from the National FFA Center and members of the AVA Ag Ed Division Public Information Committee. The instrument was field tested with 26 randomly selected vocational agriculture teachers.

A random sample of 420 agriculture teachers in the United States and territories was selected from the 1983 National Agriculture Teachers' Directory which contained approximately 12,000 names. A map of the United States and territories was used to plot the location and average broadcasting distance of 461 TV stations which, according to National FFA Supply Service records, had televised the PSA by March 1, 1984. The mailing addresses of the selected teachers were checked to see if they were within the broadcast radius of the 461 TV stations. As a result 317 potential respondents were identified for the sample.

This sample size was deemed appropriate as it would provide a power equal to .80, an effect size equal to .2 of a standard deviation (.3 on a 4 point scale) and an alpha level of .05 assuming a response rate of 62 percent (Kerlinger, 1973; Oliver, Hinkle and Hinkle, 1983).

A cover letter was included with the questionnaire and appealed to respondents' dedication to the agricultural education profession, pointed out the limited number of respondents, and informed respondents that their name would be placed in a drawing for a calculator. Two follow-up letters were mailed at ten day intervals. The last follow-up contained an additional copy of the questionnaire. The response rate was 76 percent (241 returns). A twenty percent sample of nonrespondents revealed no significant differences using a T Test when comparing mean scores and frequency distributions for all items on the questionnaire except reactions to PSA heard from other people. The average percent of nonrespondents who had not heard reactions on PSA from the eight categories of "other people" was approximately double (70 percent as compared to 35 percent) for that of respondents.

The questionnaire included likert type scales (interval level) and nominal level data. The Statistical Package for the Social Sciences version x was used to analyze the data.

RESULTS

National PSA Effectiveness

FFA public service announcements were viewed on TV by 70.5 percent of the 241 agriculture teachers who responded. The highest percentage of respondents (29.3 percent) saw only the 30 second PSA contrasted to 2.5 percent who observed only the 10 second announcement. The other two types of announcements were 20 and 60 seconds in length and were seen by 16.6 and 14.6 percent of the respondents, respectively. An additional 36 percent of agriculture teachers responding to the questionnaire observed more than one type of PSA. Table 1 portrays the categories of PSA by length and the frequency as they were viewed by respondents.

The agriculture teachers were asked to rate their general reactions to the PSA and indicate the reactions of others to whom they talked including business persons, high school students, parents, high school administrators, school board members, community leaders, other agriculture teachers, and extension agents. Ratings were on a four point likert type scale from 1 to 4 (1=Poor; 4=Excellent). The highest rating was given by agriculture teachers who responded to the survey with a mean score of 3.5. Of the other groups as reported by respondents, high school administrators rated the PSA lowest (3.1) followed by business persons with a mean score of 3.15. All other groups had mean scores between 3.2 and 3.48. Table 2 portrays agriculture teacher ratings of the PSA.

Agriculture teachers were asked to rate statements about the content of the PSA on a four point likert scale from 1 (strongly disagree) to 4 (strongly agree). Mean score ratings for the statements concerning appropriate balance between agriculture and FFA; and adequate portrayal of the scope of the agriculture industry were 3.16 and 3.42, respectively. Respondents rated the positive impact on the general public and recommendation to continue PSA 3.2 and 3.4, respectively. Table 3 shows ratings for PSA content and recommendation to continue the program statements.

PSA Effectiveness Among FFA Regions

The number of respondents by region was 88, 58, 54, and 41, from the Central Southern, Western, and Eastern regions, respectively. Tests for significant differences with regard to the general effectiveness of PSA was determined at the .05 alpha level using ANOVA.

No significant differences were found to exist among regions on general reactions from the respondents or from other persons to whom the respondents had talked including other agriculture teachers, business persons, high school students, parents, high school administrators, school board members and extension agents. A significant relationship was found with a probability level of .0381 among agriculture teachers' perceptions in the four regions for community leaders' general reactions. Table 4 shows results of the Analysis of Variance Test. However, a Sheffe post hoc analysis failed to identify any two regions which were significantly different at the .05 alpha level on this item.

No significant differences concerning five statements about the content of the PSA or future need for PSA were found among the four regions.

General Effectiveness of the PSA by Number and Length of PSA's Viewed

A significant relationship among lengths of PSA (10, 20, 30, and 60 seconds) and effectiveness scores by agriculture teachers was found with ANOVA test resulting in a probability of .0138. When a post hoc Sheffe test was applied there was no significant difference found among the effectiveness ratings on the different PSA lengths. However, an increase of approximately .2 on mean scores was observed for each increase in PSA length. The research hypothesis that effectiveness ratings by agriculture teachers will increase as the length of PSA viewed increases was not accepted.

The number of PSA's seen was not found to be related to ratings on effectiveness by agriculture teachers at the .05 alpha level, nor was any pattern observed regarding mean scores as the numbers of PSA's viewed increased. Hence, the research hypothesis that agriculture teacher effectiveness ratings will increase as the number of types of PSA viewed increases was not accepted.

Effectiveness of number and length of PSA on perceptions regarding appropriate content and need for continuing the program.

The number of different types of PSA viewed (10, 20, 30, or 60 seconds) and the length of PSA was found not to be significantly related at the .05 alpha level with agriculture teacher ratings on "portraying an appropriate banance between FFA and vo-ag," "portraying sufficient scope of agriculture," and "need to continue the PSA."

Selected Measures of PSA Effectiveness by Number and Lengths of PSA Viewed

Tests were made with ANOVA for significant relationships beween the length of PSA (10, 20, 30 and 60 seconds) viewed and ratings on the dependent variables "balance between FFA and vo-ag," "portrayal of scope of agriculture," "perceived need for PSA," and "perceived positive impact."

No significant differences were found across all FFA regions or between reigons at the .05 alpha level.

Similarly, the ANOVA test did not find significant differences between agriculture teacher ratings with regard to balance, scope, need for the PSA, and perceived positive impact among respondents who had viewed PSA less or more frequently. No differences with regard to frequencies of viewing PSA were found when comparing all regions or between regions at the .05 level.

Recommendations for future use of PSA

Respondents were asked to write recommendations to improve PSA. Responses were sorted into categories of similar type. One type of response was reported by no more than five respondents. The most frequently reported items were "need to be aired at better times," "emphasize students," "show more action," "highlight the diversity of agriculture," and "use slogans that people remember." Paid TV time arranged by local chapters and sponsored by agriculture industries which would use the PSA's was viewed as a strategy to obtaining more TV exposure during "Prime Time." Poor showing times for PSA's such as late night and early morning were considered a problem among some respondents.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations as follows were based on interpretations of the research findings.

1. The PSA filmed Public Service Announcements (PSA) were effective and should be continued.
2. Length and type of PSA were not an important item in terms of their general effectiveness, but were important to TV stations in making a decision to air the PSA.

3. The balance in the PSA between FFA and agriculture was appropriate as was the portrayal of the scope of agriculture.
4. The FFA should investigate ways to improve the PSA such as including more action, using more students and using slogans that people likely will remember.
5. An alternate form of PSA such as paid TV time sponsored by agriculture industry in cooperation with local chapters should be explored.
6. Public relation campaigns can be conducted at the national level which are equally effective in all regions of the United States.

Table 1

Frequency of TV Viewing by Length of PSA

Seconds PSA	f	%
10	4	2.5
20	26	16.6
30	46	29.3
60	23	14.6
Missing Data	84	34.9

n = 183

Table 2

Ratings of PSA by Selected Publics As Reported by Agriculture Teachers

Type of Person	Missing Data %	Not Seen/ Heard % NS	Poor %1	Fair %2	Good %3	Excel- lent %4	$\bar{X}$
Respondent (Agriculture Teacher)	9	3		3	25	30	3.5
High School Student	2	8	2	4	30	25	3.46
Other Agriculture Teacher	9	13	.4	1	21	25	3.45
Parents	5	17	1	2	25	20	3.33
Community Leader	12	24		5	15	15	3.3
Extension Agent	14	31		4	11	11	3.3
School Board Member	15	32	.5	1	15	7	3.24
Business Person	10	24	.5	4	22	10	3.15
High School Administrator	11	30	.5	5	16	8	3.1

n = 241

Note: Missing data excludes the 30% of respondents who did not see or hear about the PSA from someone else.

Table 3

Agriculture Teacher Reaction to Content and Need For Continuing PSA

Reaction Statements	Missing %	Extent of Agreement Strongly Disagree %1	Disagree %2	Agree %3	Strongly Agree %4	$\bar{X}$
Portrays scope of Ag. Industry	.7	.8	5.8	52.3	10.4	3.42
Recommendation to continue this type of PSA	1.1	1.2	2.5	32.0	33.2	3.4
Makes positive impact on general public	2	.8	3.3	44.8	19.1	3.20
Equal Balance between Vo-Ag and FFA	2	.4	2.9	50.2	14.5	3.16
Vo-Ag does not have too much emphasis	1.5	1.7	5.8	46.1	14.9	3.08

n = 241

Note: Missing data excludes the 30% of respondents who did not see or hear about the PSA from someone else.

Table 4

Analysis of Variance of General PSA Effectiveness Rating by Length of PSA

	Effectiveness Scores			
	10 Sec.	20 Sec.	30 Sec.	60 Sec.
$\bar{X}$	3.0	3.3	3.4	3.68
SD	1.15	.48	.59	.47

Source	SS	DF	MS	F	Sig.
Between Groups	3.418	3	1.139	3.68	.0138
Within Groups	39.58	128	.309		
Total	42.998	131			

P .05 = level of probability used to ascertain significant differences.

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EDUCATIONAL OBJECTIVES AND ADMINISTRATIVE CRITERIA FOR THE NATIONAL FFA CONTEST PROGRAM

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EDUCATIONAL OBJECTIVES AND ADMINISTRATIVE CRITERIA FOR THE NATIONAL FFA CONTEST PROGRAM

INTRODUCTION

Currently, the National FFA Organization conducts twelve national contests in the areas of agricultural mechanics, dairy, dairy foods, farm business management, floriculture, forestry (beginning 1985), livestock, meats, nursery/landscape, poultry, and two public speaking contests (National FFA Contests Bulletin No. 4, 1985).

The contests have been and are recognized as educational activities that are a natural outgrowth of the vocational agriculture instructional program. They are used by teachers to make vocational agriculture classes more interesting and to encourage the development of special skills (Official Manual, 1984).

In order for the National Contests to continue as quality educational activities, they must be continuously evaluated and revised. Evaluation requires that criteria relating to administrative functions and educational objectives reflecting desired outcomes of the contests exist. The problem previous to this study was, that no educational objectives had been established for the national contests as a whole, and the administrative criteria developed was either inadequate or not used.

PURPOSE AND OBJECTIVES

The purpose of this study (Smith, 1985) was to establish overall educational objectives and administrative criteria for the National FFA Contests. More specifically, the objectives of this study were to: 1) establish educational objectives for the National FFA Contests in the areas of vocations and careers, basic skills, personal development, sociological and cultural development, health and leisure, and subject matter; and 2) establish administrative criteria for the addition, change, or discontinuing of a National FFA Contest.

PROCEDURES

Three Delphia Questionnaires were developed and used in this study. The design of Delphi Questionnaires one and two were similar to those suggested by Delbecq et. al. The third questionnaire utilized an importance scale whereby the respondent could rate the importance of each objective and administrative criteria formulated as a result of information gathered through the first two questionnaires.

A review of literature, research, and consultation with faculty members in the Agricultural Education Department at Iowa State University indicated that six areas of concern should be addressed to aid in the development of objectives for the National FFA Contests. The six concern areas were: 1) vocations and careers; 2) basic skills; 3) personal development; 4) sociological and cultural; 5) health and leisure; and 6) subject knowledge.

Three areas of concern were identified for development of administrative criteria for the National FFA Contests. They were: 1) adding a new contest; 2) discontinuing a national contest, and 3) changing a national contest.

On the first questionnaire the six concern areas for developing the objectives and the three concern areas for developing administrative criteria were stated in open-ended question format. A descriptor sentence was added to the six questions used for developing objectives to help clarify for respondents the meaning attached to the terms used in identifying the six concern areas. In addition, four researcher-developed objectives and four researcher-developed administrative criteria were added under the open-ended questions for each of the concern areas to further clarify the meaning of a particular area of concern, and to provide an example to help respondents begin to generate their own objectives and administrative criteria.

The researcher-developed objectives and administrative criteria were added as a result of suggestions made by persons who were involved with a pretest of simulated Delphi Questionnaires 1 and 2. The pretest group indicated that generated items would help respondents in the areas already identified above.

The respondents were instructed to indicate whether they agreed or disagreed with the researcher-generated objectives and administrative criteria, write comments about the items, and/or change the items if they felt the need to do so.

In addition, the respondents were asked to write at least one additional objective or administrative criteria under each concern area.

The objectives and administrative criteria formulated by each of the respondents from Delphi Questionnaire #1 were compiled into lists representing the respective concern areas. Like items were combined to formulate revised objectives and administrative criteria lists to be used in the second questionnaire.

Delphi Questionnaire #2 was developed from the lists of objectives and administrative criteria generated from the first questionnaire. The second questionnaire had essentially the same format as the first, six objective concern areas and three administrative criteria concern areas using the same open-ended questions as was generated for the previous questionnaire.

On the second questionnaire, the respondents were asked to rank the revised lists of objectives and administrative criteria with the most important item receiving the lowest number (1 = most important, etc.). This ranking system was employed as a result of suggestions made after a pre-test of a simulated Delphi Questionnaire #2.

Comments from respondents to the first questionnaire were compiled and summarized in two reports covering the objectives and administrative criteria. These reports, along with the second questionnaire were sent to respondents. Included in the summaries were the reactions to the researcher generated items.

Delphi Questionnaire #3 was developed after a thorough analysis of the results provided by Delphi Questionnaire #2. The format for the objectives was changed in that the six concern areas were removed and one list of objectives compiled. The list of objectives in the third questionnaire resulted from the researcher combining objectives identified as similar by the respondents and identifying those objectives that were consistently ranked in the top half of each concern area objective list from the second questionnaire. The researcher determined those objectives consistently ranked in the top half of each concern area objective list by 1) dividing the total number of objectives in each list by two for determination of a cut-off point, 2) comparing the calculated cut-off point with the mean rank of each objective within each of the lists, and 3) deleting those objectives from each list with a mean rank greater than the cut-off point.

The administrative criteria lists were left in their original three concern areas to avoid confusion of respondents as to how the criteria would be applied to the National FFA Contests. It was felt from the responses received on earlier questionnaires that adequate differences existed between the functions of adding, discontinuing, and changing a contest and that those distinctions should continue between the administrative criteria.

The lists of administrative criteria that were included in the third questionnaire resulted from a process similar to the one used to identify the objectives except that those items consistently ranked in the bottom quarter of each list were removed. This was accomplished by dividing the total number of criteria in each list by 1.5, instead of 2, and following the same procedure as listed for the objectives. The parameters were widened when determining which administrative criteria to include in each area because of the small number of criteria in each concern area. In addition, the researcher wanted to maintain a viable list of criteria in each of the three criteria concern areas.

An importance scale with values from 1 to 5 (1 indicating no importance and 5 indicating utmost importance) was selected after a review of literature and discussions with knowledgeable individuals at Iowa State University. The scale provided the respondents with an opportunity to indicate those objectives and administrative criteria they felt to be important for the National FFA Contest program.

A summary was also prepared that explained the prepration of the third questionnaire and summarized the comments received from the second questionnaire.

After reviewing the literature and related research, four groups were identified from which individuals could be selected for the Delphi panel. The four groups were: 1) the National FFA Board of Directors (nine individuals); 2) the National FFA Contest Superintendents (ten individuals); 3) the Special Advisory Committee on the National FFA Contests (16 members at the time the study began); and 4) ten industry representatives who had been involved with the National FFA Contests that were nominated by the Contest Superintendents. The total number of individuals contacted to participate in the study was 43. Of the 43 individuals contacted, 33 agreed to participate in the study. This size of Delphi panel was within acceptable standards for this study as directed by Anderson and others.

Respondents who did not wish to participate in the study were asked to return blank questionnaires (three individuals). Those not returning the first questionnaire before the mailing of the second questionnaire, after being contacted by the researcher by telephone, were assumed not to meet the criteria for Delphi panel participation as indicated by the literature review (seven individuals).

The individuals that were selected to participate met the criteria suggested by Delbecq et al. as being important to selection of the Delphi panel. Nash observed that experts in the area under investigation hold the most powerful positions and it is likely that their opinions will come to pass. It was felt that the individuals selected to participate were those that were in a position to either recommend changes, make changes, or both.

The three questionnaires described in this chapter were used in the formulation of objectives and administrative criteria for the National FFA Contests. The questionnaires were printed and mailed, along with appropriate cover letters and summaries to each Delphi panel participant.

The three questionnaires were mailed on December 14, 1984; March 11, 1985; and April 26, 1985 respectively. Each of the individuals receiving a questionnaire were contacted by telephone as a follow-up if the researcher had not received their questionnaire within a week after the stated deadline for return had expired. The stated deadlines for return of the three questionnaires were January 11, 1985; March 20, 1985; and May 8, 1985; respectively. Response rates for the three questionnaires from the Delphi panel were 100%.

The treatment of data involved the use of percentages, means, and rank order due to the nature of the research process utilized.

Statistical analysis for Delphi Questionnaire #1 involed the calculation and report of the percentages of respondents that agreed, disagreed or did not respond to the researcher generated objectives and administrative criteria.

The statistical analysis process for Delphi Questionnaire #2 involved, 1) calculation of the percentage of respondents who indicated a desire to eliminate any of the six concern areas used to formulate the objectives, 2) calculation of a mean rank for each objective and administrative criteria based on the ranking of each item by the respondents, 3) determination of a cut-off point for retaining objectives and administrative criteria by dividing the total number of objectives in each list by 2 and the total number of criteria in each list by 1.5, and 4) comparison of mean rank calculated in step 2 with the respective cut-off points calculated in step 3 to determine the objectives and administrative criteria to retain.

The statistical analysis process for Delphi Questionnaire #3 was: 1) calculation of a mean importance ranking for each objective and administrative criteria, 2) listing of each objective and administrative criteria according to the mean importance rating calculated in Step 1 from most important to least important, 3) determine a mean importance rating point that would serve to identify the objectives and administrative criteria to be recommended to the National FFA Board of Directors.

The objectives and administrative criteria formulated for the National FFA Contest Program were reported in their order of rated importance with the mean importance rating indicated.

RESULTS

The educational objectives formulated were, for the most part, in the cognitive or psychomotor domains. This was expected given the vocational education or industrial orientation of the individuals involved in the study and the continued desire of the Delphi panel to have measurable objectives relating to the demonstration of competencies. The researcher did, however, find five of the nineteen objectives that would be classified as in the affective domain. They were: exhibit a positive attitude toward being successful in agricultural occupations; demonstrate the ideals of honesty (in its broad aspect), respect, consideration, service, etc., to others; demonstrate team work (working with others toward a common goal) and good relationships with others whether at work or otherwise; exhibit a positive attitude towards lifelong learning; and recognize that competition is critical and essential to the competitive free enterprise system.

Two other objectives, demonstrate competencies needed for employment in agricultural occupations related to the contest area and demonstrate leadership potential and management ability, were felt by the researcher to include elements of all three domains.

The desire of the panel members to make the objectives more measurable was evidenced by their comments to that effect, and the wording changes made to reflect that desire. Words such as "develop", "understand", and "appreciate" were changed to "demonstrate" to reflect the idea that contests were for the demonstration of measurable competencies. Also, the difficulty associated with measuring understandings, appreciations, attitudes, etc. were aptly described when a panel member wrote "Teach me the appreciation of a front-end loader on a tractor by having me shovel a 10 ton load of sand".

Another area of concern for panel members was three of the six concern areas developed by the researcher. As previously reported, they were all accepted, but not without comment. Most of the time this concern was expressed by panel members questioning whether the contests could or should address the objectives in the concern area of vocations and careers, sociological and cultural, and health and leisure. The greatest amount of concern was expressed by the Delphi panel about the later two concern areas.

Interestingly enough, however, when given the opportunity to reject the concern areas, only two individuals responded. The researcher expected more individuals to take the opportunity to respond to the concern areas based on comments received from the first questionnaire. Either the directions were not read by the respondents closely enough, or the respondents felt that some elements of the concern areas in question were of importance. Judging by the results of this study, the researcher believes the later to be more representative of the feelings of the panel.

The administrative criteria selected reflected the concerns of the Delphi panel that: 1) the national contests have national significance, 2) the topic area represented by a contest be representative of and complimentary to the curriculum of vocational agriculture nationally, 3) the content of a contest reflect the competencies and knowledge required currently within the area represented by a contest, 4) the contest be evaluated by appropriate individuals to ensure educational value and quality, 5) the contest be in agreement with states' objectives (overall and individual), and 6) the contest have adequate resources to provide a quality educational experience.

The Delphi technique proved, as others have found, to be an effective tool in the formulation of the educational objectives. The technique also proved to be equally effective in the formulation of the administrative criteria. Modification of the third questionnaire to provide a five-point importance rating scale was considered both effective and efficient in collecting the desired data from the Delphi panel. It should be noted, however, that the time involved with this technique could prove restrictive to individuals under time constraints.

The educational value of the contests as instructional tools were implied by the Delphi panel. The panel, however, did caution that the contests should not be the focus or become the end toward which instruction in vocational agriculture is directed.

CONCLUSIONS AND RECOMMENDATIONS

As a result of this study (Smith, 1985), the following educational objectives and administrative criteria were formulated for and recommended to the National FFA Contest Program.

Educational Objectives

Demonstrate the ability to recognize and perform quality work.

Demonstrate the use of scientific, problem-solving, and decision-making skills and abilities through practical application within the contest area.

Demonstrate ability to apply the needed agricultural technical knowledge in the contest area.

Demonstrate competencies learned in the vocational agriculture program.

Demonstrate competencies needed for employment in agricultural occupations related to the contest area (affective and cognitive as well as psychomotor).

Demonstrate knowledge and skills in completing tasks common to occupations in agricultural areas focused on by the contest.

Use correct "basic skills" in completing agricultural tasks in contests.

Demonstrate common organizational and manipulative skills and abilities required in contest area that are related to those necessary in agribusiness and industry.

Demonstrate safety procedures and recognize health hazards in occupations within a contest area.

Exhibit positive attitude toward being successful in agricultural occupations.

Demonstrate judgement through oral or written responses, completion of tasks, and recognition for work well done.

Describe current industry standards, procedures, and technology.

Demonstrate ability to locate and properly use resource information and/or technical assistance required to complete tasks in pertinent areas of agriculture.

Demonstrate the ideals of honesty (in its broad aspect), respect, consideration, service, etc., to others.

Demonstrate team work (working with others toward a common goal) and good relationships with others whether at work or otherwise.

Demonstrate leadership potential and management ability.

Exhibit a positive attitude towards lifelong learning.

Recognize that competition is critical and essential to the competitive free enterprise system.

Administrative Criteria

Adding Contests.

The new national contest must compliment the content and instruction of pertinent agricultural education areas taught in vocational agriculture classes nationally.

The content of the proposed new contest must be judged appropriate to existing conditions and trends in the agricultural business or industry it represents by a 5-10 member review panel consisting of representatives from the industries and businesses represented by the contest.

Adequate resources must be available to conduct the contest ie. financial (industry sponsorship), facilities, equipment, staffing, etc., in a way that provides a quality educational experience for participants.

Proposed national contests must be approved by the Special Advisory Committee for National Contests and the National FFA Student Delegate Contest Committee before being considered by the National FFA Board of Directors.

Thirty or more states should be providing instruction in the topic area in which the contest is proposed.

Specific educational benefits (minimum of three) not otherwise provided through existing state and local programs shall be stated in support of the proposed contest.

Twenty-five or more states must petition for a new national contest to the National FFA Board of Directors.

Discontinuing Contests.

Contest content is outdated or irrelevant as perceived by a panel of businesss/industry representatives, a polling of past contest participants, and evidence secured through studies of the contest.

Contest deleted only after input from industry and/or agribusiness people, vo-ag teachers, contest committee, and past contest participants has been received and approves its deletion.

Lack of resources and/or support to provide a quality educational experience for participants.

Contest is not in agreement with the national and/or individual contest objectives.

The cost of a contest financially and time wise outweighs the benefits derived by the number of students participating.

Less than 25 states are conducting a state contest and/or entering their teams in the national contest.

Less than 25 states are providing instruction in the area covered by the contest.

Changing Contests.

Evaluations by vocational agricultural educators (local, state, and national), agribusiness and industry representatives, sponsors, past participants, and other interested parties every three years are made to update and/or redirect the contest.

The contest is not focused on skills and competencies required by workers in the industry which the contest represents.

The contest does not utilize application of knowledge gained or developed in the instructional program.

The contest content is not in agreement with the stated national or individual contest objectives.

Topic of the contest is no longer a major part of the curriculums in most schools and states.

Current contest does not use instructional materials of the instructional program it represents.

The National FFA Contests were generally accepted by the Delphi Panel as having educational value as an instructional tool and should remain a part of the total program of the FFA and vocational agriculture. The contests, however, should never become the focus or the end toward which instruction is directed. As such, those who are involved with the contests should make every effort to ensure that contests result from instruction and not instruction from contests.

It was recommended that: the National FFA Board of Directors and National FFA Contest Program Staff carefully review the objectives and criteria formulated, the contests be evaluated every three years, the formulated objectives be used to aid in the planning and operation of present and future national contests, the administrative criteria be used when decisions have to be made concerning adding, changing, or discontinuing a national contest, the educational objectives and administrative criteria be approved by the National FFA Board of Directors and published in the National FFA Contests Bulletin No. 4, the inclusion of more than just past contest participants and their FFA advisors be considered when conducting evaluative research on any national contest, the Delphi technique be considered for similar types of studies that seek to develop objectives or criteria, and the importance scale modification used on the third questionnaire be considered for similar Delphi studies.

This study suggested that further research be conducted in several areas.

1) Research will be needed to determine how effective these objectives and criteria are in directing local, state, and national contests and in introducing, discontinuing, and changing national contests.

2) Further research is needed or individual national contests to determine what changes, if any, need to be made to ensure and enhance the educational value of the contests.

3) Research should be conducted to identify whether or not the educational objectives formulated in this study are being met by the national contests.

4) Research needs to be conducted to determine if similar state contests have educational objectives identified in this study considered as a model.

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A NATIONAL PROFILE OF AGRICULTURAL TEACHER EDUCATORS AND STATE SUPERVISORS OF VOCATIONAL AGRICULTURE BY MBTI PREFERENCE TYPE

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INTRODUCTION

Agricultural educators are in the business of communicating, teaching, learning, and leading--all affected by personality (preference type). Preference type of an individual has been shown to have far reaching implications for virtually every aspect of his/her personal and professional life. As such, preference type certainly affects how students learn, how teachers teach, how leaders lead and how we all work and communicate. During the past fifteen years interest in the Myers-Briggs (1962) Type Indicator (MBTI) among educators has grown tremendously.

In agricultural education, a better understanding of preference type and type implications for teaching, learning, leadership, and communication should provide some valuable insights. The primary purpose of this study was gather information useful in describing the preference type profile of state supervisors and teacher educators in agricultural education.

PURPOSE AND OBJECTIVES

The primary purpose of this study was to provide a national preference type profile of professionals employed in teacher education and state supervision. Specific objectives were to:

1. Determine preference type of teacher educators and state supervisors in agricultural education.

2. Compare preference type of teacher educators and state supervisors with that expected from the "general" population.

3. Compare preference type of teacher educators with preference type of state supervisors.

4. Compare preferences (temperament type) of teacher educators and state supervisors by AATEA region.

5. Compare preferences (temperament type) of teacher educators and state supervisors by years of experience.

6. Compare current working assignment by temperament type of respondent group.

7. Compare rankings of critical issue facing agricultural education by teacher educators and state supervisors.

8. Compare rankings of agricultural education areas in need of strengthening by teacher educators and state supervisors.

PROCEDURES

A mailed questionnaire and MBTI booklet and answer sheet were used to collect data for this study. Using the 1984-85 AATEA and NASAE Directories, all teacher educators and state supervisors in all states were asked to participate through an initial contact with the head administrator of the respective unit.

Of the 533 possible participants, 334 teacher educators and state supervisors responded to the initial request for information (62.9%). A twenty percent random sample of nonrespondents (39) was contacted by telephone and encouraged to return a questionnaire and MBTI form. A t-test failed to find significant differences between responses of initial and nonrespondents, so all responses were used for final analysis (367 of 533 or 68.7%).

Since the group querried was a total population, descriptive statistics were used in the analysis of the data (means, standard deviations and frequencies). Cross-tab comparisons and chi square statistics were used to compare observed and expected distributions of preference data.

A Selection Ratio Type Table (SRTT) computer program (Kainz, 1976) was utilized to provide a convenient ratio index for comparing the distribution in percentages of types in one group (agricultural educators) with distribution found in another (general or data base) population.

Myers-Briggs Type Indicator

The MBTI, developed by Isabel Briggs Myers and Katherine C. Briggs over a period of twenty years, attempts a psychometric representation of Jung's (1923) theory of psychological types. The MBTI is a 126 forced-choice item questionnaire concerned with individual differences in people, and the preferred manner in which information is gathered and decisions are made.

The following qualities make the MBTI desireable for assessing preference type: 1) catagories are broad enough to describe groups of people, yet narrow enough to provide useful descriptions; 2) the MBTI is benign; questions are nonthreatening; 3) there is no stigmatizing factor in the outcome since there are no "wrong" responses or "wrong" types. Social desirability can, therefore, be described for any or all preference types.

Individual preferences are determines along the following four dichotomous preference scales:

E-I Scale: Extroverts (E) prefer to obtain their energies from active involvement in the outer world of people and things. Introverts (I) prefer to gain energy from concentration on the inner world of concepts and ideas. The E-I ratio is reported to be 75:25 in the general population (Kiersey, 1978).

S-N Scale: Sensing individuals (S) prefer to gather information through observing the world through the five senses. Intuitives (N) prefer to gather information through a sixth sense, or hunch about possiblities and concepts beyond their senses. The S-N ratio is reported to be 75:25 (Kiersey, 1978).

T-F Scale: Thinkers (T) prefer to make decisions based on logical facts and objective observation. Feelers (F) prefer to make decisions based on personal values and emphathetic or subjective observation. The T-F ratio is reported to be 50:50 (Kiersey, 1978).

J-P Scale: Juding(J) individuals prefer to live their life in a structured, orderly, and planned fashion. Perceiving (P) individuals prefer to live a more spontanious, flexible lifestyle. A 50:50 J-P ratio is reported (Kiersey, 1978).

A combination of each preferred scale value makes up a person's individual preference type (e.g., ESTJ, INFP, INTJ etc.) There are 16 specific MBTI types (depicted in Table 2). Kiersey and Bates (1978) discussed four combinations of MBTI types that tend to possess predictable, consistent descriptions. These "temperament" types are SJ, SP, NF, and NT.

Data Sources

All teacher educators and state supervisors of agricultural education in the United States were used as the population in collecting data for this study. Names were obtained from the 1984-85 AATEA and NASAE Directories. After initial screening of inappropriate listings, 533 possible respondents were included in the population.

Normative data on proportionate type distributions in the "general" population data base were obtained from research findings assembled by The Center for Applications of Psychological Type (CAPT), Gainsville, Florida. The data base sample used in SRTT analysis consisted of a population of 33,201 individuals.

RESULTS

Following are some of the major findings that help to describe a preference type profile for 244 teacher educators and 123 state supervisors:

Table 1 shows that agricultural education professionals are:

- More Extrovert (57%) than expected from the base data (I = 1.09) and less Introvert (43%) than expected (I = .90).
- More Sensing (70%) than expected from the base data (I = 1.23) and less Intuitive (30%) than expected (I = .70).
- More Thinking (80%) than expected from the base date (I = 1.44) and less Feeling (20%) than expected (I = .45).
- More Judging (89%) than expected from the base data (I = 1.49) but less Perceiving (11%) than expected (I = .27).

Table 1: Percent and Ratio of Teacher Educators and State Supervisors Compared to Those of the General Population

Preference Scale		Teacher Educators (N = 244)	State Supervisors (N = 123)	Total (N = 367)
(E)xtrovert	N	138	71	209
	%	56.56	57.72	56.95
	I	1.08	1.11	1.09
(I)ntrovert	N	106	52	158
	%	43.44	42.28	43.05
	I	0.91	0.88	0.90
(S)ensing	N	157	99	256
	%	64.34	80.49	69.75
	I	1.14*	1.42*	1.23**
I(N)tuitive	N	87	24	111
	%	35.66	19.51	30.25
	I	0.82*	0.45**	0.70**
(T)hinking	N	188	105	293
	%	77.05	85.37	79.84
	I	1.39**	1.54**	1.44**
(F)eeling	N	56	18	74
	%	22.95	14.63	20.16
	I	0.52**	0.33**	0.45**
(J)udging	N	215	112	327
	%	88.11	91.06	89.10
	I	1.47**	1.52**	1.49**
(P)erceptive	N	29	11	40
	%	11.89	8.94	10.90
	I	0.30**	0.22**	0.27**

I = Self selection index (Ratio of the percent of preferences in group to percent in a data base of 33,201) A SRTT of 1.00 indicates preferences are the same in the study group as would be expected in the base group.
* = significantly different from base population at the .05 level, i.e., CHI SQ. > 3.8;
** = significantly different from the base population at the .01 level, i.e., CHI SQ. > 6.6;

Table 2 indicates that:

-- Only four of the 16 types represented by professional agricultural educators (ISFJ, INTJ, ENFJ, and ESFJ) did not differ significantly from the base population.

-- Types represented in the agricultural education ranks in significantly greater proportions than those in the base data were ISTJ, 25.3% (I = 2.00); ESTJ, 29.7% (I = 2.43); and ENTJ, 10.6%, (I = 1.77).

-- Types among agricultural education in significantly smaller proportions than expected were ISTP, 0.9%, (I = .19); ISFP, 1.1%, (I = .30); ESTP, 2.2%, (I = .51); ESFP, 0.3% (I = .06); ENFP, 2.7% (I = .36); ENTP, 2.5%, (I = .45); INFJ, 1.4%, (I = .37); INFP, .3%, (I = .05); INTP, 1.1%, (I = 22).

-- Teacher Educators (TE) differed from State Supervisors (SS) most dramatically in the following preference type:

ESTJ (TE = 24.2%, SS = 40.7%)
ENTJ (TE = 12.3%, SS = 7.3%)
ENFJ (TE = 6.2%, SS = 0.0%)

Table 3 compares ratios of temperament types of teacher educators (TE) and state supervisors (SS) with those of the base population. The following temperaments were observed:

SJ --- TE = 59.4% (I = 1.49) and SS = 77.2% (I = 1.94)
SP --- TE = 4.9% (I = 0.49) and SS = 3.3% (I = 0.19)
NF --- TE = 11.5% (I = 0.54) and SS = 2.4% (I = 0.11)
NT --- TE = 24.2% (I = 1.10) and SS = 17.1% (I = 0.78)

Table 2: Teacher Educators (TE) and State Supervisors (SS) by MBTI Type

ISTJ

	N	%	I
TE	62	25.4	2.0**
SS	31	25.2	2.0**
TOT	93	25.3	2.0**

ISFJ

	N	%	I
TE	12	4.9	0.7
SS	8	6.5	0.9
TOT	20	5.5	0.7

INFJ

	N	%	I
TE	5	2.1	0.6
SS	0	0.0	0.0*
TOT	5	1.4	0.4*

INTJ

	N	%	I
TE	20	8.2	1.5
SS	8	6.5	1.2
TOT	28	7.6	1.4

ISTP

TE	1	.41	0.1**
SS	2	1.6	0.4
TOT	3	0.8	0.2**

ISFP

TE	3	1.2	0.3*
SS	1	0.8	0.2
TOT	4	1.1	0.3**

INFP

TE	0	0.0	0.0**
SS	1	0.8	0.2*
TOT	1	0.3	0.1**

INTP

TE	3	1.2	0.3**
SS	1	0.8	0.2*
TOT	4	1.1	0.2**

ESTP

TE	7	2.9	0.7
SS	1	0.8	0.2
TOT	8	2.2	0.5*

ESFP

TE	1	0.4	0.1**
SS	0	0.0	0.0*
TOT	1	0.3	0.1**

ENFP

TE	8	3.3	0.4*
SS	2	1.6	0.2*
TOT	10	2.7	0.4**

ENTP

TE	6	2.5	0.5*
SS	3	2.4	0.5
TOT	9	2.5	0.5*

ESTJ

TE	59	24.2	2.0**
SS	50	40.7	3.3**
TOT	109	29.7	2.4**

ESFJ

TE	12	4.9	0.7
SS	6	4.9	0.6
TOT	18	4.9	0.7

ENFJ

TE	15	6.2	1.3
SS	0	0.0	0.0*
TOT	15	4.1	0.9

ENTJ

TE	30	12.3	2.0**
SS	9	7.3	1.2
TOT	39	10.6	1.8**

I = Self selection index (ratio of % of type in group to % in base population)
* = significantly different from base population at the .05 level, i.e. CHI SQ greater than 3.8
** = significantly different from the base population at the .01 level, i.e. CHI SQ greater than 6.6

Table 3: Percent and Ratio of Teacher Educators and State Supervisors' Temperament Type Compared to that of the Base Population

Temperament Group		Teacher Educators (N = 244)	State Supervisors (N = 123)	Total (N = 367)
NT	N	59	21	80
	%	24.18	17.07	21.80
	I	1.10	0.78	0.99
NF	N	28	3	31
	%	11.48	2.44	8.45
	I	0.54**	0.11**	0.40**
SJ	N	145	95	240
	%	59.43	77.24	65.40
	I	1.49**	1.94**	1.64**
SP	N	12	4	16
	%	4.92	3.25	4.36
	I	0.29**	0.19**	0.26**

I = Self selection index (Ratio of the percent of preference in group to percent in a database of 33,201). A SRTT of 1.00 indicated temperment type in the study group in the same proportion as expeceted in the base group.
* = significantly different from the base population at the .05 level, i.e., CHI SQ. > 3.8;
** = significantly different from the base population at the .01 level, i.e., CHI SQ. > 6.6;

Table 4 depicts temperament types of professionals in agricultural education by AATEA region. In comparison to other regions, the Central region claims a significantly higher number of NF and lower number of SJ temperament types. The Eastern region has a higher than expected number of NT temperament type. The Southern region, perhaps because of the heavy loading of "S", show significantly more SJ temperament types than other regions. No disproportionate ratios among temperament types appeared in the Western region.

Table 4: Percent and Ratio of Temperament Type Compared by AATEA Region

Temperament Group		Central (N = 117)	Eastern (N = 54)	Southern (N = 147)	Western (N = 51)
NT	N	30	18	22	11
	%	25.64	33.33	14.97	21.57
	I	1.18	1.53*	0.69**	0.99
NF	N	15	5	7	4
	%	12.82	9.26	4.76	7.84
	I	1.52*	1.10	0.56*	0.93
SJ	N	68	30	109	34
	%	58.12	55.56	74.15	66.67
	I	0.89*	0.85	1.13**	1.02
SP	N	4	1	9	2
	%	3.42	1.85	6.12	3.92
	I	0.78	0.42	0.94	0.90

I = Self selection index (Ratio of the percent of temperament type in region to percent in the total respondent group of 367)
* = significantly different from total group at the .05 level, i.e., CHI SQ. > 3.8;
** = significantly different from the total group at the .01 level, i.e., CHI SQ. > 6.6;

In Table 5, ratios of temperament types were compared by experience catagories. Among teacher educators and state supervisors with 1 to 8 years of experience, significantly more NF types and less SJ types were observed than expected. However, by 17 to 24 years of experience there were disproportionately less NF types.

Table 5: Percent and Ratio of Temperament Type Compared by Years of Experience

Temperament Group		Years of Experience			
		1 - 8 yrs (N = 147)	9 - 16 yrs (N = 123)	17 - 24 yrs (N = 75)	25 yrs & > (N = 26)
NT	N	35	25	15	6
	%	23.81	20.33	20.55	23.08
	I	1.09	0.93	0.94	1.06
NF	N	20	7	1	3
	%	13.61	5.69	1.37	11.24
	I	11.61**	0.67	0.16*	1.37
SJ	N	86	88	52	15
	%	58.50	71.54	71.23	57.69
	I	0.89*	1.09	1.09	0.88
SP	N	6	3	5	2
	%	4.08	2.44	6.85	7.69
	I	0.94	0.56	1.57	1.76

I = Self selection index (Ratio of the percent of temperament type in each catagorie to percent in the total respondent group of 367)
* = significantly different from the total group at the .05 level, i.e., CHI SQ. > 3.8;
** = significantly different from the total group at the .01 level, i.e., CHI SQ. > 6.6;

When primary assignments of state supervisors and teacher educators were compared by temperament type, the following general findings were observed:

- SJ temperament types were more inclined to have assigned duties in agricultural mechanics, administration, supervision, and extension education.
- SP temperament types were more inclined to have assigned duties in agricultural mechanics, instructional methods, and supervision.
- NF temperament types were more inclined to have assigned duties in curriculum development, program planning, SOEP, and inservice coordination.

- NT temperament types were more inclined to have assigned duties in leadership development, program planning, international development, inservice coordination, and student teaching supervision.

Teacher educators and state supervisors were asked to rank "critical issues" facing agricultural education. Table 6 reveals that the issue receiving the highest ranking was "Legislation at state and federal levels",. However, supervisors ranked it significantly higher than teacher educators. "Declining enrollments in secondary programs" ranked second in importance. Teacher educators ranked it significantly higher than state supervisors ranked the issue. A highly sifnificant difference was revealed in rankings of, "State and national leadership in agricultural education", with teacher educators ranking it higher than supervisors.

Table 6: Mean Rankings and F-Values of Critical Issues Facing Agricultural Education as Perceived by Teacher Educators and State Supervisors

Issue	T.E (N = 243)	S.S. (N = 123)	Total (N = 366)	F-Value
Legislation at State and Federal Levels	4.77	4.01	4.52	5.19*
Public Relations at State and Federal Level	5.56	5.63	5.58	0.05
Public Relations at the Local Level	4.98	5.31	5.09	1.23
Excellence in Education Report Implications	5.30	5.48	5.36	0.25
Declining Enrollments in Secondary Programs	4.37	5.16	4.63	6.21*
Declining Enrollments in Ag Ed Departments	5.11	5.74	5.32	3.58
Quality of Instruction in Ag Ed	4.35	4.95	4.55	3.16
Ecomonic Implications For Ag Ed	6.01	6.12	6.05	0.11
State and National Leadership in Ag Ed	5.74	6.67	6.05	7.62**
Local Support For Vo Ag	4.59	5.11	4.77	2.32

Mean Ranking was calculated with 1 = highest ranking and 10 = lowest ranking
* = significantly different at the .05 level
** = significantly different at the .01 level

Perceptions of teacher educators and state supervisors on areas of agricultural education in need of strengthening are shown in Table 7. The top 5 rankings in order were: SOE programs, instructional program improvement, summer vo ag program, adult education in agriculture, and high technology in agriculture. Supervisors ranked two of the ten areas higher than that of teacher educators. They were summer vo ag programs and FFA/student leadership organizations. Teacher educators ranked high technology, extension and international education higher than did state supervisors.

Table 7: Mean Rankings and F-Values of Professional Agricultural Education Areas in Need of Strenthening as Perceived by Teacher Educators and State Supervisors

Area	T.E. (N=243)	S.S. (N=123)	Total (N=366)	F-value
S O E Programs	3.08	2.70	2.95	2.70
Instructional Program Improvement	3.11	3.08	3.10	0.01
Summer Vo Ag Program	3.80	3.20	3.59	5.17*
Adult Education in Agriculture	4.38	4.37	4.38	0.00
High Technology in Agriculture	4.85	5.53	5.08	5.41*
Agricultural Mechanics Instruction	5.20	5.60	5.34	2.17
FFA/Student Leadership Organizations	6.14	5.57	5.95	4.03*
Vo Ag Facilities Usage	6.38	6.17	6.31	0.53
Extension Education	6.98	8.71	7.56	37.64**
International Ag Development	7.51	9.07	8.03	27.48**

Mean ranking was calculated with 1 = highest rank and 10 = lowest rank
* = significantly different at the .05 level
** = significantly different at the .01 level

CONCLUSIONS

Several conclusions and implications for the agricultural education profession become evident when reviewing the results of the preference profile.

1. The large proportion of SJ temperament types in the study, especially in administration and supervision roles, indicate a strong reliance on traditional approaches and values in agricultural education. Normally, SJ types are more resistant to change, less interested in research, and less motivated by innovation and new ideas.

2. The small proportion of SP types in the study indicate a gap may exist between teaching styles available in teacher education programs and the preferred learning styles of many College of Agriculture students. Barrett, Sorenson and Hartung (1984) indicate SP students are one of the most numerous temperament types in the University of Nebraska College of Agriculture. Other studies indicate the SP student is most interested in the hands-on approach of vocational education and makes up the largest temperament type in secondary vocational programs.

3. The large proportion of ISTJ and ESTJ types reinforces data found by Horner and Barrett (1984). They found those two types most common among a variety of agricultural leaders in Nebraska.

4. The large proportion of ISTJ adminstrators and supervisors lends support to data found by Foster (1984) when analysizing preference type of extension agents and extension administrators in Nebraska.

5. The smaller proportion of Feeling types (20%) and Perceivers (11%) in the profession indicate that either these persons are not entering the profession, or are leaving the profession the profession earlier than other preference type. Yet, clientele groups such as students and teachers are generally well represented within these type catagories. This differential may lead to misunderstandings about such items as program direction, communication, and decision-making processes because of differences in preference type.

6. Differences observed between teacher education professionals and supervision professionals may account for possible differences in perceptions. As a group, state supervisors would be less inclined to make changes, whereas the teacher education group would be more willing to take chances on new direction, ideas or concepts.

7. Similarities observed between teacher educators and state supervisors in agricultural education may provide additional insight into how current trends and issues in agricultural education are being interpreted and acted upon. It may be that teacher education and state supervision reinforce the actions of each other rather than critically analyze and question for the good of the profession because of the similarities in preference type.

RECOMMENDATIONS

The following recommendations are made to enhance the agricultural education profession through improved communications and leadership as well as an increased understanding of teaching and learning styles.

1. Teacher educators and state supervisors of agricultural education should become familiar with preference type and its implications for program improvement. Additionally, they should study their own profiles, strengths and weaknesses with a view toward improving communication, teaching, learning, and leadership.

2. Teacher educators and state supervisors should become more familiar with preference type to gain a better understanding of professional colleagues and departmental workmates to better appreciate the uniqueness of the contributions of each to the profession and/or departmental mission.

3. Teacher educators and state supervisors should become more familiar with preference type of vocational agriculture instructors, vocational agriculture students, and agricultural education majors to improve working relationships and enhance leadership within the profession.

4. Additional research should be conducted to ascertain the impact on preference type on teaching and learning styles in an effort to improve teaching methodology and performance of agricultural education majors and/or secondary vocational agriculture students.

5. Additional research should be conducted to ascertain the relationship of preference type and an individuals primary work asssignment and viewpoints on critical issues facing the profession.

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DISCUSSION OF RESEARCH REPORTS
ON
NATIONAL PERSPECTIVES*

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The three research reports we have heard this morning have provided us with some important and interesting information which has potential value in helping us solve educational problems and improve our educational programs. Quality research must be properly conceived, conducted, reported, and examined if we are to find answers to perplexing problems in agricultural education. Now that we have heard the reports, I hope my comments will assist us in the examination stage of the process. In the final analysis, those who read the research reports must decided how applicable and appropriate they are for answering questions and solving problems. Those present today may choose to accept or reject the validity of my remarks in this regard, but I do hope that you join me in continuing the process of critical examination of our profession's investigations and use the information gleaned by this examination accordingly.

At the outset, let me state that my remarks are based on the research papers sent to me for review prior to the conference. I plan to indicate what I regard to be the strengths of the papers presented, raise questions and make recommendations for improvement.

Many times we find that research raises more questions than it answers. Accordingly, I have some questions regarding these studies. Nonetheless, I commend the authors for conducting research on topics that have a national perspective. Each one of these studies gets us thinking and that in itself is an important achievement.

REPORT 1: AN ASSESSMENT OF THE NATIONAL FFA PUBLIC SERVICE ANNOUNCEMENT PROGRAM
BY
Dean Sutphin, Roy Dillon, Mike Rush

Strengths of the Paper

I compliment the authors for conducting research on an interesting and important topic. The image of agriculture and agricultural education is a major problem. Unfortunately it has been a major problem for a long time. The authors are to be commended for their efforts in evaluating effectiveness of image enhancing programs in vocational agriculture.

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*Presentation given at the 1985 National Agricultural Education Research Meeting, Atlanta, Georgia; December 6, 1985.

I compliment the authors for clearly stating the purpose and objectives of the study.

The procedures of the study were clearly outlined and well written. The sample was appropriately selected and there was good representation from the various regions.

I compliment the authors for carefully describing the procedures for follow up of the respondents and non-respondents. Using a twenty percent sample of non-respondents was a good technique to ascertain any differences between respondents and non-respondents.

The authors should be commended for using appropriate statistical analysis and presenting the data in an easily understandable table format.

Overall, the study seems to support the premise that public service announcements are useful tools to enhance the image of vocational agriculture.

Questions and Comments

Although I found this study to be well done, I do have a number of questions and comments in general.

I am not totally convinced that the authors fully answered the basic research question as to whether or not the public service announcements are effective. My concern here is not based so much on what you found but instead on what your operational definitions of some critical terms happened to have been at the outset of this study. For example, what is your definition of the term "effectiveness"? Are we to assume what you mean by this term? What tangible evidence do we have that says the public service announcements have been effective? What were the goals and objectives of the public service announcements? Were they or were they not achieved? Why or why not? This study gives us the perceptions of agriculture teachers regarding effectiveness, but I am not sure what parameters you placed around the term "effectiveness".

There seems to be a number of assumptions made in conducting this study. Can we safely assume that agriculture teachers could objectively evaluate the usefulness and impact of the public service announcements? This group would seem to be a highly biased group. What would one expect to hear from this group? We seem to be talking to ourselves. Were the public service announcements developed to impact agriculture teachers or students and parents?

It would have been helpful had the authors explained more fully how information was obtained about what school administrators, students, parents, and agribusinessmen thought about the public service announcement program. This aspect of the procedures seemed unclear to me. Considerable emphasis appeared to be placed on this data in your results. What control did you have over collection of this data?

Although the introduction was lengthy, I had difficulty finding a clearly stated rationale for the study based on a carefully outlined theoretical framework. The literature reviewed in the introduction supports a need to inform the public about agriculture. However, I am not sure that it sets the stage for undertaking the study.

It would have been helpful to have had an explanation of how the instrument was developed and tested for validity and reliability.

What was the rationale for testing to see if differences existed in perceptions of teachers by regions?

I am concerned about the emphasis placed on the conclusions and recommendations. I think we must be somewhat cautious in light of the fact that the data are based on 70 percent of the respondents who returned the survey (76 percent) actually saw a public service announcement. Therefore just over 50 percent of the sample viewed the public service announcements.

Overall, I think the authors have collected some useful information but I believe they should go further in their research and assess the impact of the public service announcement program on the people they were intended to reach.

I encourage the authors to briefly indicate how the results of this study could effect change. What are the implications of the findings? We should be relating what these findings mean to the profession and how the results can and will effect change.

Finally, I realize this concern is outside the parameters of your study, but I want to know how many young people (teenagers) identify with Eddie Albert? A Bruce Springsteen maybe - but Eddie Albert?? Nice man, but I'm not convinced a man his age will attract many teenagers to the study of agriculture.

REPORT II: EDUCATIONAL OBJECTIVES AND ADMINISTRATIVE CRITERIA FOR THE NATIONAL FFA CONTEST PROGRAM

BY

Mack Smith and Alan Kahler

Strengths of the Paper

I compliment the authors for conducting a study on an interesting and very critical topic. Contests have national, state, and local significance and are a very important part of the vocational agriculture programs, judging by the amount of time, energy, and money vocational agriculture teachers, state supervisors, and teacher educators and others devote to them. It is fitting that a study be made of the goals and objectives of all this activity. The central theme behind a study of this kind is the concept of accountability. The authors are to be complimented for raising our awareness of this important concept in the area of the FFA contest program.

I wish to commend the authors for establishing a need for the study early in their paper. The literature review, although brief, does lead the reader to the purpose and objectives of the study.

The authors clearly identified the purpose and objectives of the study. However, it would have been helpful had the authors defined or at least explained more fully the "six areas of concern" and the "administrative criteria". It would have been much easier to understand the essence of the study had these terms or concepts been described in full. We should not have to make any assumptions about the focus of the study.

The authors are to be commended for carefully following the Delphi format in this study. The procedures were fully described and appropriately documented. The Delphi format takes a considerable amount of time and the authors should be complimented for their diligence and attention to detail.

Questions and Comments

I enjoyed reading this paper and found it well done, however, I have a number of questions and comments. Most of my concerns regarding this paper go to the very heart of the study. A great deal of discussion is given to the attempt to put statements of objectives in measureable terms. This effort is understandable and appreciated. My concern centers on the statements the authors have generated. They appear to be goals. They are broad statements of intent not specific items to be measured directly. It would have been helpful to have defined or at least explained what is meant by the term "educational objectives". As I see it, each one of the statements must be broken down further as it applies to each contest. When this is done each statement under that contest will become an educational objective which in turn contributes to an overall educational goal as stated in this paper. One might say this problem is only a problem of semantics, but I believe it underscores a critical problem in our research. We must carefully define what we are trying to study so that it will be interpreted correctly.

In addition, how does one measure some of the statements arrived at in this study. For example: Exhibit a positive attitude or demonstrate honesty.

I am concerned that nearly three pages of space in this paper was given over to explanation of the procedures. Although this information was important it could have been condensed. We are most interested in the results of the study and their implications. The key question is . . . Will the results effect change? Why should the profession use what was found in the study to improve upon existing programs. What effect will this information have locally?

How exactly did the authors arrive at the decision to have six concern areas - - vocations and careers, sociological and cultural, health and leisure, basic skills, personal development, subject knowledge? What specific theoretical basis is there for supporting this decision? This concern was not fully addressed in the paper. Why weren't the objective statements categorized by concern area in the paper?

The concern of the panel regarding the danger of contests becoming the focus or the end toward which instruction in vocational agriculture is directed is well understood. Unfortunately it is easier to talk about this problem than govern it. What did the panel say about this issue if anything? How can this concern be managed?

Finally, I am curious to know how many, if any, vocational agriculture teachers were involved in this study. The panel was made up of national representatives, but how many of these representatives are practicing teachers and do these people represent a cross-section of the many diversities in the profession. How did those people who chose not to participate in the Delphi format differ from those who did?

REPORT III: A NATIONAL PROFILE OF AGRICULTURAL TEACHER EDUCATORS AND STATE SUPERVISORS OF VOCATIONAL AGRICULTURE BY MBTI PREFERENCE TYPE

BY

Richard Foster and James Horner

Strengths of the Paper

I compliment the authors on conducting research on an interesting and important topic. Research on the factors that have an effect on teaching, learning, leadership development and communication is certainly worthwhile and timely. It has often been said that we should know ourselves before we can effectively help others. This study helps us by contributing to our knowledge base. Although individual data is probably the most important aspect of conducting the Meyers - Briggs Type Indicator project, development of a profile of agricultural educators has merit.

The authors clearly stated the purpose and objectives of the study and they followed the objectives carefully. The authors did what they said they were going to do.

Appropriate descriptive statistics were used in this study. The data collected from agricultural educators were compared to normative data. This procedure strengthens the study considerably.

I compliment the authors for using a twenty percent random sample to test the differences between respondents and non-respondents. One might ask what could have been done to further enhance the return of the questionnaires.

The authors gave an appropriate and helpful description of the Myers - Briggs Type Indicator program and questionnaire.

The information from this study tends to support the results from various other studies on communications among school administrators and teachers. There appears to be a lack of communication between these groups. One wonders how much of this communications gap can be attributed to the "preference type" of those involved. This study does build on other research of related issues.

Finally, I compliment the authors for including a section in their paper regarding the educational significance of the results of the study.

Questions and Comments

Although I enjoyed reading this paper, I have several questions and concerns. It would have been helpful had the authors defined the term "preference type" much more fully. It is assumed that anyone reading the paper would be familiar with the terminology.

The theoretical framework for the study based on a review of the literature appeared to be brief. The authors indicated that the study could provide some valuable insights, but did not indicate what these insights could help the profession do. The authors should explain more fully the need for the study. Should a study be conducted just because a large number of studies have been done on the topic? What is the expected impact of the study?

The authors seem to put a great deal of emphasis on the significance of preference type. Can all behavior be attributed to one factor? It may be appropriate to say that preference type is a major factor to consider in dealing with people, but whether or not it is the only factor, as implied by the authors, is open to question.

What was the reason for using the whole population? Why not use a sample? I assume you wanted everyone to have the advantage of participation and gaining some knowledge of self. This rationale should have been stated if it is indeed true.

It would have been helpful to have used the titles or some form of label of the preference types through out the paper rather than use only the letters. I had to continuously check to determine what the letters stood for.

Could the presentation of the data been given in a more simplified manner? Sometimes it was somewhat confusing to follow the narrative as presented intermingled with the tables. It might have been helpful to have the tables at the end of the report.

I am concerned that the authors included an analysis of the critical issues in agricultural education in this study. I assume the authors consider this analysis a part of the profile of teacher educators and supervisors in agricultural education. When comparisions are made between state supervisors and teacher educators is it so surprising to find considerable differences? The mission and objectives of each of these segments of the agricultural education profession are different. This is especially true when one considers the broadening scope of Departments of Agricultural Education. Therefore, are the differences in the perceived needs and concerns so unusual and surprising? It would have been helpful to discuss the relationship between the issues/concerns and the preference types of educators and supervisors.

I am curious why none of the conclusions addressed the information that the authors found regarding the concerns and needs in agricultural education.

Finally, the authors are encouraged to carefully proofread the paper before submitting it to a professional journal.

Summary

I believe we must be careful in conducting survey research. Trow (1967) makes the following observations about survey research in general:

> The errors and inadequacies of survey research in education appear at many points from the way problems are initially chosen and defined to the choice of the subject population, the selection of the sample, the design of the individual questions and the questionnaire as a whole, and the analysis of the resulting body of data (p. 319).

Overall, I commend the authors for their efforts and encourage them to continue to conduct research on these important issues in agricultural education.

In summary, allow me to state that I have attempted to answer ten questions in reviewing these studies. I believe they form the framework around which we must examine our research studies.

1. Is the research problem clear?
2. Are the objectives clearly stated?
3. Is the research problem worth investigating?
4. Has the author made any assumptions and stated any limitations?
5. Is there a clear theoretical framework around which the problem has been developed?
6. Has credibility been established by a sound review of the literature?
7. Is the methodology and analysis sound and appropriate?
8. Are the procedures clearly stated?
9. Are the findings clearly stated and the conclusions and recommendations justified?
10. What are the implications of the research? Will the results effect change.

As I stated at the outset, I hope that we continue to critically analyze our research investigations and that our evaluations lead to improvement of our profession. It is my hope that these few comments have contributed constructively to this process.

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MATHEMATICAL PROBLEM-SOLVING SKILLS OF HIGH SCHOOL VOCATIONAL AGRICULTURE STUDENTS AND UNDERGRADUATE STUDENTS IN AGRICULTURAL EDUCATION

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INTRODUCTION

The importance of basic skills in reading, writing and mathematics is widely considered essential for a student's subsequent learning both in school and at work. Corman (1980), in her study Basic Skills Deficiencies of Secondary Vocational Education Students, states:

> The ability to read with understanding, write, and compute are generally regarded as critical to subsequent learning and employability of a student entering the labor market, upgrading present skills, or being retrained (p. 1).

Taylor (1977) further supports this when he says:

> . . . problem solving is one of the overriding goals for today's mathematics instruction. What exact problems students will face in the future is not known, but it is obvious that they will be living in a world of change. Therefore, the educational program must prepare students with the mathematical problem-solving skills they will need in different circumstances.

To the American public, mathematics is generally considered a basic skill for optimum efficiency in social, consumer, economic and occupational endeavors. It follows that courses of study in vocational agriculture must include instruction in both cognitive and manual skills including instruction that enables learners to develop basic competency in computational skills. It is indisputable that those who do not possess basic mathematical problem-solving skills are disadvantaged, especially when they compete with those who possess these skills.

Although the importance of the basic skills to schooling is widely known and accepted, the extent to which these skills are mastered by vocational education students in secondary schools has rarely been investigated. Corman (1980) says, "virtually nothing is known about differences in competence in basic skills among students in different vocational programs" (p. 1).

Bourque (1976) studied the mathematical abilities of freshman students, their improvement in mathematical ability, and the relationship between mathematical skills and technical area performance. He found that young people can add, subtract, multiply, and divide, but have problems using percents, decimals, and multi-step word problems. Papritan (1978) states that "instruction can be of little value because the class does not have primary arithmetic skills necessary for solving problems in the instructional unit."

Although this concern is generalized across all student populations, the vocational education curriculum is specifically oriented to occupational skill training with the expressed intent of aiding youth in securing and maintaining employment. This presents a particularly acute problem for vocational educators. Lotto (1983) states "If vocational students are not adequately prepared in basic skills areas, they will not only have difficulty with their vocational or occupational training, but also experience difficulty in finding employment and in later performance on the job."

During the 1982-83 academic year, a study entitled "Mathematical Problem-Solving Skills of High School Vocational Agriculture Students" was conducted by Falakdine (1984). The study investigated the problem-solving skills of high school vocational agruculture students in the subject matter area of agricultural mechanics. A summary of the study's findings, reported by Gliem and Warmbrod (1985), indicated the following:

1. A majority of high school teachers reported that they teach students how to solve the mathematical problems validated by the panel of experts in agricultural mechanics.
2. For most of the mathematical problems, teachers expected less than 75 percent of their students to be able to solve the problems.
3. Vocational agriculture students do not achieve at a high level of competence in solving mathematical problems. On the 20-item Mathematical Problem-Solving Test, the mean score was 11 (SD = 4.45; median = 11.3; mode = 11), or 55 percent of the items correct.
4. Vocational agriculture teachers do not estimate correctly the students' level of competence to solve mathematical problems. Teachers tend to overestimate students' competence to solve mathematical problems.
5. There is a moderate positive relationship between students' scores on the Mathematical Problem-Solving Test and the number of high school mathematical courses completed and the students' academic rank in their class.

The results of this study raised questions such as: Do students know the mathematical functions involved or is the word problem approach to problem-solving causing them difficulty? Can teachers solve the mathematical problems validated by the panel of experts?

PURPOSE AND OBJECTIVES

The purpose of the study reported in this paper was to describe the mathematical problem-solving ability pertaining specifically to agricultural mechanics of high school vocational agriculture students and undergraduates in agricultural education preparing to be teachers. The following research questions were investigated:

1. What level of competence in solving mathematical problems do undergraduates in agricultural education acquire?
2. What level of competence in solving mathematical problems do high school vocational agriculture students acquire?
3. What are the relationships between the high school students' level of competence in solving mathematical problems and the following variables (a) number of high school courses in mathematics; (b) sex of the students; (c) class rank of the students; (d) grade level of the students; (e) whether a calculator was used in solving the problems; and (f) how (the form) mathematical problems are presented to students.

PROCEDURES

The mathematical problems validated by the panel of experts in Falakdine's (1984) study were used. The questions were presented to undergraduate students as word problems. Questions were presented to vocational agriculture students as problems with mathematical functions only given or as problems with mathematical functions and units given. Table 1 shows examples of the three methods of problem presentation.

TABLE 1

MATHEMATICAL PROBLEM PRESENTATION METHODS

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1. Word Problem Form

   A tank holds 20 3/4 gallons of gasoline. If the tank is full and 8 1/2 gallons of fuel are used, how many gallons of fuel are left in the tank?

   Mathematical Functions Only Form

   20 3/4 - 8 1/2 =

   Mathematical Function with Units Form

   20 3/4 gallons - 8 1/2 gallons =

2. Word Problem Form

   How many pounds of wettable powder would you put into a 200 gallon spray tank if 10 gallons of water and 2 pounds of wettable powder are to be applied per acre?

   Mathematical Functions Only Form

   $$200 \text{ X } \frac{2}{10} =$$

   Mathematical Function with Units Form

   $$\frac{200 \text{ gallons}}{\text{tank}} \text{ X } \frac{2 \text{ lbs.}}{10 \text{ gallons}} =$$

3. Word Problem Form

   For broadcast spraying of herbicides, regular flat fan nozzles are utilized. If nozzel spacing is 15 inches, travel speed is 5 miles per hour and the nozzle flow rate is 0.2 gallon per minute, how many gallons per acre of the herbicide are being applied?

   Mathematical Function Only Form

   $$0.2 \text{ X } \frac{1}{15} \text{ X } \frac{1}{5} \text{ X } \frac{60}{1} \text{ X } \frac{1}{5,280} \text{ X } \frac{12}{1} \text{ X } 43,560 =$$

   Mathematical Function with Unit Form

   $$\frac{0.2 \text{ gal.}}{\text{min.-nozzle}} \text{ X } \frac{1 \text{ nozzle}}{15 \text{ inches}} \text{ X } \frac{1 \text{ hr.}}{5 \text{ mi.}} \text{ X } \frac{60 \text{ min.}}{1 \text{ hr.}} \text{ X } \frac{1 \text{ mi.}}{5,280 \text{ ft.}} \text{ X } \frac{12 \text{ in.}}{1 \text{ ft.}} \text{ X } \frac{43,560 \text{ sq. ft.}}{\text{Acre}} =$$

Undergraduate students were comprised of agricultural education majors seeking certification in agricultural production or agricultural mechanics. Data were collected during the quarter that students enrolled in the teaching methods course which is taken the quarter prior to student teaching. Data were available for 35 undergraduates.

High school students were comprised of the most advanced class of vocational agriculture students in cooperating student teaching centers. There students were randomly given the test in either the mathematical functions only form or the mathematical functions with units form. Data were available for 169 sophomore, junior, and senior vocational agriculture students.

The 20-item Mathematical Problem-Solving Test included one-step and multiple-step problems involving whole numbers, decimals or fractions, and a combination of whole numbers and decimals or fractions. The internal consistency of the tests were assessed using Cronbach's alpha with the word problem form having a coefficient of 0.76, the mathematical functions only form coefficient being 0.93, and the mathematical functions with units form coefficient being 0.90.

RESULTS

Problem-Solving Achievement of Undergraduates

Undergraduates preparing to be teachers of vocational agriculture had an average score of 12.5 (62.5 percent of the items correct) on the 20-item Mathematical Problem-Solving Test (Table 2). The distribution of scores ranged from 7 to 19 with a median score of 13. Seniors scored slightly but not significantly higher than juniors. Virtually all undergraduates had completed a course in college algebra.

Ninety percent of the undergraduates correctly solved 5 of the 20 problems on the test; at least 75 percent but fewer than 90 percent of the undergraduates correctly solved 3 problems; and at least half but fewer than three-fourths of the undergraduates correctly solved 6 problems. Less than 50 percent of the undergraduates correctly solved 6 of the 20 problems.

TABLE 2

SCORES ON MATHEMATICAL PROBLEM-SOLVING TEST BY UNDERGRADUATE STUDENTS IN AGRICULTURAL EDUCATION

Score	Frequency	Percent	Cumulative Percent
7	2	5.7	5.7
8	2	5.7	11.4
9	5	14.3	25.7
10	0	0.0	25.7
11	4	11.4	37.1
12	4	11.4	48.6
13	4	11.4	60.0
14	3	8.6	68.6
15	5	14.3	82.9
16	2	5.7	88.6
17	2	5.7	94.3
18	1	2.9	97.1
19	1	2.9	100.0
Total	35	100.0	

Mean = 12.5   Median = 13.0
SD = 3.2

Problem-Solving Achievement of Vocational Agriculture Students

Scores of vocational agriculture students on the 20-item Mathematical Problem-Solving Test varied from 0 to 20 with a mean of 7.9, an average score of 40 percent of the items correct (Table 3). The positively skewed distribution of scores has a median of 6.

Only one of the 20 problems was solved correctly by 90 percent or more of the students. Four additional problems were solved correctly by at least 50 percent of the students. For 15 of the 20 problems, less than one-half of the vocational agriculture students calculated the correct answer.

TABLE 3

SCORES ON MATHEMATICAL PROBLEM-SOLVING TEST BY VOCATIONAL AGRICULTURE STUDENTS

Score	Frequency	Percent	Cumulative Percent
0	4	2.4	2.4
1	6	3.6	5.9
2	9	5.3	11.2
3	26	15.4	26.6
4	19	11.2	37.9
5	16	9.5	47.3
6	13	7.7	55.0
7	6	3.6	58.6
8	10	5.9	64.5
9	10	5.9	70.4
10	1	0.6	71.0
11	5	3.0	74.0
12	4	2.4	76.3
13	4	2.4	78.7
14	5	3.0	81.7
15	4	2.4	84.0
16	5	3.0	87.0
17	6	3.6	90.5
18	5	3.0	93.5
19	5	3.0	96.4
20	6	3.6	100.0
Total	169	100.0	

Mean = 7.9 Median = 6.0
SD = 5.7

Relationships Between Vocational Agriculture Students' Scores and Selected Variables

Data reported in Table 4 indicate that higher scores on the Mathematical Problem-Solving Test were achieved by vocational agriculture students who had completed more high school courses in mathematics (algebra, plane geometry, solid geometry, advanced mathematics, and calculus), had a high academic rank in their class, were female rather than male, used a calculator when completing the test, and took the "mathematics functions only" form of the test rather than the "mathematics functions and units" form of the test. Twelfth-grade students scored higher on the test than eleventh-grade students who, in turn, scored higher than tenth-grade students. These differences were not statistically significant, however.

TABLE 4

SCORES ON MATHEMATICAL PROBLEM-SOLVING TEST FOR GROUPS OF VOCATIONAL AGRICULTURE STUDENTS

Variable and Groups	n	$\bar{X}$	SD
Number of Math Courses			
0	56	4.23	2.84
1	44	7.39	4.61
2	25	9.16	5.68
3	27	10.22	6.01
4 or more	17	15.47	5.04
Test Type			
Math functions only	85	10.10	5.94
Math functions and units	84	5.61	4.37
Class Rank			
Upper one-third	38	12.92	5.98
Middle one-third	112	6.71	4.75
Lower one-third	19	4.57	3.67
Use of Calculator			
No	61	5.84	4.00
Yes	108	9.02	6.15
Sex			
Male	144	7.51	5.47
Female	25	9.96	6.45
Class in School			
10th Grade	11	6.27	4.31
11th Grade	76	7.07	5.00
12th Grade	82	8.83	6.27

The relationships between the aforementioned variables and score on the Mathematical Problem-Solving Test were confirmed through regression analysis reported in Tables 5 and 6. Sixty-two percent of the variance in scores on the test is explained by the linear combination of five variables--number of mathematics courses completed, the type of test, the student's rank in class, whether a calculator was used when taking the test, and whether the student was male or female. The regression analysis indicates that each of these variables contributes significantly to the equation when the other variables in the equation are held constant (Table 6).[1]

As would be expected, students who had completed more high school courses in mathematics and students with a higher academic standing achieved higher scores on the test. Each additional mathematics course (algebra I, algebra II, plane geometry, solid geometry, advanced mathematics, and calculus) completed by students is associated with an increase of approximately two points on the 20-item test-- an increase of 10 percent. A similar gain in test scores is associated with a student's academic rank in class. Females scored approximately 10 percent higher on the test than did males.

The type of test completed by students is significantly related to the scores students achieve on the test. When the other independent variables in the equation are held constant, students completing the "mathematics functions only" form of the test achieved, on the average, a test score 5 points higher (a 25 percent increase) than students who completed the "mathematics functions and units" form of the test. Apparently, indicating the units for the numbers in the test items interferes with accurate calculations by students when they add, subtract, multiply, and divide.

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[1] An examination of residuals indicated that the assumptions basic to regression analysis were not violated.

2

TABLE 5

SUMMARY DATA FOR REGRESSION OF SCORE ON MATHEMATICAL PROBLEM-SOLVING TEST ON SELECTED VARIABLES

(n = 169)

Variable	Intercorrelations						Mean	SD
	X_1	X_2	X_3	X_4	X_5	Y		
Number Math Courses (X_1)	1.00	.07	-.50	.14	.01	.58	1.44	1.36
Test Type[a] (X_2)		1.00	-.03	.01	.01	-.40	1.50	.61
Class Rank[b] (X_3)			1.00	-.17	-.06	-.47	1.89	.57
Use of Calculator[c] (X_4)				1.00	.04	.27	.64	.48
Sex[d] (X_5)					1.00	.15	1.15	.36
Test Score (Y)						1.00	7.87	5.67

[a] 1 = Math functions only; 2 = math functions and units

[b] 1 = Upper one-third; 2 = middle one-third; 3 = lower one-third

[c] 0 = Did not use calculator; 1 = Used calculator

[d] 1 = Male; 2 = Female

TABLE 6

REGRESSION OF SCORE ON MATHEMATICAL PROBLEM-SOLVING TEST FOR VOCATIONAL AGRICULTURE STUDENTS ON SELECTED VARIABLES

(n = 169)

Variable	Partial Regression Coefficient	t	p
Number Math Courses (X_1)	2.03	8.69	.001
Test Type (X_2)	-5.01	-9.15	.001
Class Rank (X_3)	-2.02	-3.63	.001
Use of Calculator (X_4)	1.94	3.35	.001
Sex (X_5)	2.19	2.83	.005
(Constant)	15.52		

$R^2 = .62$; $p < .001$

Standard error = 3.55

Other studies (Barrow, Mullis, and Phillips, 1982) have shown that students using calculators to solve mathematical problems score higher than students who do not use calculators. That finding was confirmed in the research reported in this paper in that students using calculators scored an average of 1.94 points higher (approximately a 10 percent increase) on the test than students who did not use calculators when completing the test.

SUMMARY AND RECOMMENDATIONS

Undergraduate students (primarily juniors and seniors) preparing to be teachers of vocational agriculture demonstrated only a moderate level of competence in solving word problems in agricultural mechanics. Their level of achievement is lower than what is expected or desired of persons who will be teaching high school vocational agriculture students how to solve mathematical problems in agricultural mechanics. Two options warrant exploration as means of improving the competence of prospective teachers to teach mathematical problem solving. One possibility is to increase the number of mathematics courses undergraduates are required or advised to take. Another possibility is to incorporate mathematical problem solving as an integral part of agricultural engineering and agricultural mechanics courses that prospective teachers complete.

Previous research (Falakdine, 1984; Gliem and Warmbrod, 1985) indicated that high school vocational agriculture students were, at best, only moderately successful in solving word methematical problems in agricultural mechanics. The question raised by that research was the extent to which the students' low achievement in mathematical problem solving could be explained by their lack of mathematical skills (addition, subtraction, multiplication, and division) or by their inability to understand word problems and then use the appropriate mathematical operations in solving the problems. The research reported in this paper demonstrates that vocational agriculture students achieved at a relatively low level on a test which measures their skill in performing the mathematical operations of addition, subtraction, multiplication, and division. Actually, students demonstrated a lower level of achievement when the numbers used in the calculations were accompanied by abbreviations indicating the units to which the numbers referred.

Vocational agriculture students using a calculator were more proficient in performing mathematical operations than students not using a calculator. Since students perform mathematical operations more accurately when using a calculator, it is recommended that teachers encourage students to learn to use proficiently and accurately a calculator when solving mathematical problems.

Two expected relationships involving level of achievement in mathematical problem solving were confirmed. Vocational agriculture students who rank highest academically in their class scored highest on the problem-solving test. Also, there was a significant positive relationship between the number of mathematics courses completed in high school and scores achieved on the mathematical problem-solving test. It follows, of course, that the enhancement of students' mathematical problem-solving ability is partially a function of the number of courses in mathematics they complete, particularly courses like algebra, geometry, and other advanced high school mathematic courses.

The research reported in this paper indicated that female high school vocational agriculture students achieved significantly higher scores on the test than male students. This finding differs from the usual findings of sex comparisons of mathematics achievement of high school students which indicate that males generally have a higher mathematics achievement level than females.

The research reported in this paper adds support to the tentative conclusions drawn from the previous research (Falakdine, 1984; Gliem and Warmbrod, 1985). First, the evidence is clear that vocational agriculture students' inability to solve mathematical probelms is at least partially a function of teachers' level of competence to solve mathematical problems. Second, vocational agriculture students are not more proficient in performing mathematical operations of addition, subtraction, multiplication, and division than they are in solving word problems. And third, higher levels of achievement in mathematical problem solving require that students enroll in algebra, geometry, and other advanced mathematics courses in addition to enrollment in vocational agriculture.

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TECHNICAL AGRICULTURE KNOWLEDGE LEVEL ATTAINED BY STUDENTS ENROLLED IN VOCATIONAL AGRICULTURE II CLASSES

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INTRODUCTION

Louisiana, as well as the rest of the nation, is experiencing a crisis in education. College entrance test scores, standardized basic achievement test scores and other indicators of educational quality indicate that students have not performed as well educators and the general public would like.

Since the money being spent on general education may not be producing the desired results, legislators, educators, and the general public are asking if expenditures for programs such as vocational agriculture are producing desirable results. In addition, funding agencies need information upon which policy decisions can be based.

A review of the literature revealed that a paucity of research exists in the area of student achievement and competency testing in vocational agriculture programs. Cheek and McGhee (1985) found that students who had SOE projects and who were FFA members scored significantly higher on the Applied Principles of Agribusiness and National Resource Education test they administered. Morton and McCracken (1979) studied the relationship between the quality of a supervised occupational experience (SOE) program (in terms of income and scope of program) and level of academic achievement on a test measuring technical agriculture knowledge in production agriculture. They found that higher quality SOE programs are likely to result in greater learning achievement if the effects of scholastic aptitude, opportunity, year in school, and instructor project visits are statistically controlled.

Studies such as these can provide information to determine the merits of existing programs, the need for new programs, or the need for revision of existing programs. This study was conducted in an effort to add to existing knowledge in the area of student achievement in vocational agriculture and also because no valid and reliable evaluation of the instructional effectiveness of Louisiana vocational agriculture programs had ever been conducted.

PURPOSE AND OBJECTIVES

The purpose of this study was to assess the technical agriculture knowledge level attained by students who had completed Vocational Agriculture II and the factors related to the knowledge attainment level. The objectives were:

1. Determine the technical agriculture knowledge level attained by Vocational Agriculture II students on a criterion-referenced test developed from the state Vocational Agriculture II basic curriculum.

2. Determine if students' scores on this test differed according to selected variables: FFA membership, supervised occupational experience (SOE) program, economically disadvantaged status, special needs status, and student's race.

3. Determine if the grand means of the students' scores by teacher differed according to selected teacher variables: age, educational level, whether the teacher received additional income from farming, agribusiness or other part-time work, and years teaching experience.

4. Determine to what extent the topics listed in the Louisiana basic curriculum guide were being taught by the teachers in the schools.

PROCEDURES

Two instruments were used in the study. The teacher form consisted of questions designed to secure demographic information and also to determine which of the basic curriculum topics were being taught.

The Vocational Agriculture II test was developed from a test item bank used for the Louisiana literary rally tests. The instrument used in the study consisted of 52 test items stratified according to the 20 subject matter areas in the Vocational Agriculture II basic curriculum. The test also had a coded area where the teacher could record the demographic information needed for each student prior to removing the student's name from the test.

Both instruments were examined for content validity by six vocational agriculture teachers who were students in a graduate course in vocational agriculture program evaluation and by four vocational agriculture teachers who were not members of the class. The teachers reported that both instruments possessed content validity.

The test was field tested in four schools that had not been selected to participate in the study. The teacher survey form was field tested with the four teachers from the schools that field tested the test plus 11 other teachers who were not in the sample. The field test revealed that revisions in the instruments were not necessary. Test item reliability was measured using the Kuder-Richardson 20 correlation coefficient. A KR20 value of .84 was calculated on the field test results and .87 was calculated on the research sample data. These data indicate that the test possessed internal consistency.

The populations used in the study included all vocational agriculture teachers in Louisiana who taught Vocational Agriculture II during the 1984-1985 school year and the students in their Vocational Agriculture II classes at the time of the study. A sample size of 140 teachers out of the 275 teachers in the state and their Vocational Agriculture II classes were randomly selected based on Cochran's formula (Snedecor and Cochran, 1980).

A teacher survey form, enough tests for the teachers' Vocational Agriculture II class(es) (based on information from the Louisiana Department of Education), instructions on administering the test and providing student information, and a return envelope were mailed to the sample. Of the 140 teachers, 118 (84.3%) administered the test and provided the teacher information as requested. The 118 teachers had 1,997 Vocational Agriculture II students in their classes.

The test scores and demographic characteristics of the teachers and students from the first mailout were compared to the test scores and demographic characteristics of the teachers and students whose responses were received after the follow-up mailing. No significant differences were found. In addition, the 22 teachers who did not return the completed tests and teacher survey form were surveyed by phone. Since no significant differences existed between the teacher characteristics of those who had responded and those who had not, it was determined that the non-respondents did not differ from the respondents. As a result of these procedures, it was determined that the respondent groups were representative of the population of teachers and Vocational Agriculture II classes.

Descriptive statistics were used to analyze the data related to objectives 1 and 4. Inferential T-tests and oneway analyses of variance with post hoc Scheffe' tests were used to analyze the data related to objectives 2 and 3. The alpha level for these tests was set at .01 to alleviate the problems associated with multiple t- and f-tests.

RESULTS

Knowledge Attainment

The mean score on the 52 item criterion-referenced test was 54.9% with a standard deviation of 16.8. This may be compared to the results of the Cheek and McGhee study (1985) in which they found that Florida students achieved a score of 52.3% on a criterion-referenced test covering information in the Florida curriculum guide.

FFA Membership

Over 82% of the students (82.9%) were FFA members. The analysis of variance and the post hoc Scheffe' test revealed that FFA members who were in the top half of members in FFA participation, as reported by the teacher, scored significantly higher (59.3%) than those students who were in the bottom half in FFA participation (53.4%) and non-members (47.7%). In addition, FFA members in the bottom half in FFA participation scored significantly higher than non-members. The results of the ANOVA are presented in Table 1. Cheek and McGhee (1985) also found that FFA members scored significantly higher than non-members.

Insert Table 1 about here

Race

Over seventy-one percent (71.2%) of the students were white while 27.4% of the students were black. The t-test revealed that white students scored significantly higher (59.8%) than black students (54.0%) (Table 2). It should be noted that many studies have supported the thesis that social and other life factors account for academic performance differences when the race issue is investigated further.

Insert Table 2 about here

Disadvantaged Status

Over half (53.0%) of the students were reported to be economically disadvantaged by their teachers. The t-test revealed that non-economically disadvantaged students scored significantly higher (58.4%) than economically disadvantaged students (51.9%). The results of the t-test are presented in Table 3.

Insert Table 3 about here

Special Needs Status

Approximately one-tenth (11.2%) of the students were identified as special needs students. The t-test revealed that non-special needs students scored significantly higher (55.7%) than the special needs students (48.2%). The t-test results are presented in Table 3.

SOE (Supervised Occupational Experience) Programs

Over two-thirds (68.2%) of the students had SOE programs. The t-test revealed that those students who had SOE programs scored significantly higher (57.0%) than those students who did not have SOE programs (50.3%). The results of the t-test are presented in Table 3. Cheek and McGhee (1985) also found that students who had SOE programs scored significantly higher than students who did not.

Teacher Variables

The grand means of student scores by teacher were analyzed to determine if the grand means varied according to the levels of the teacher variables. The analyses of variance revealed that no significant differences existed among the grand means of the students' scores by teacher for five of the teacher variables; namely, age, years teaching experience, degree, number of teachers in the department and geographic location. In addition, the results of three t-tests revealed that no significant differences existed between the grand means of those teachers who had part-time income from agriculture, agribusiness or non-agricultural sources and those who did not.

Topics Taught

The data indicate that the percent of teachers teaching the 17 topics in the basic curriculum ranged from 42.4% for soil judging to to 98.3% for the FFA. Overall, the teachers were teaching 71.8% of the topics in the basic curriculum. These data are presented in Table 4.

Insert Table 4 about here

CONCLUSIONS AND RECOMMENDATIONS

1. The data indicated that 71.8% of the topics in the basic curriculum were taught. Since the basic curriculum was designed to be taught in its entirety in all Vocational Agriculture II classes, it is recommended that the State staff analyze the results of this study and either modify the basic curriculum or initiate activities that will result in teachers adhering to the basic curriculum.

2. Since the data indicated that FFA members scored significantly higher than non-members and that students with SOE projects scored significantly higher than students without SOE projects, it is recommended that the State staff emphasize the results of this study in their communications with teachers in an effort to motivate teachers to increase FFA and SOE program participation.

3. Researchers in other states should conduct similar studies to provide additional evidence as to the outcomes of vocational agriculture programs.

4. Researchers should consider studying other educational products of the vocational agriculture program, including the affective and psychomotor aspects, in an effort to document program effectiveness.

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Table 1

Analysis of Variance of Student Test Scores by FFA Membership Status

Mean by FFA membership status				
Top half	Bottom half	Non-member	F-ratio	Prob. of F
59.3 n=830	53.4 n=824	47.7 n=328	67.3*	.0000

*p .0001

Table 2

T-test (Using Pooled Variance) of Student Test Scores by Race

	Mean/S.D./n			
Variable	White	Black	T-value	Prob.
Race	58.5	45.6	16.1*	.000
	15.7	16.0		
	1422	547		

*p .001

Table 3

T-test (Using Pooled Variance) of Student Test Scores by Selected Variables

	Mean/S.D./n			
Variable	Yes	No	T-value	Prob.
Economically	51.9	58.4	8.86*	.000
disadvantaged	17.4	15.3		
status	1059	923		
Special needs	55.7	48.2	6.39*	.000
status	16.5	17.0		
	1773	223		
SOE project	57.0	50.3	8.39*	.000
	16.8	15.6		
	1362	620		

*p .001

Table 4

Percent of Teachers Teaching Topics in the Basic Curriculum Guide

Topic	% teaching this topic	Topic	% teaching this topic
FFA	98.3	Livestock breeding principles	64.4
Leadership	97.5	Seed & plant selection	63.6
Orientation to Vo-Ag II	94.1	Safe use of chemicals	61.9
Arc welding	93.2	Soil water	59.3
Awards & contests	87.3	Insects affecting plants	55.9
Soil fertility/soil fertilization	81.4	Diseases affecting plants	53.4
Developing SOE programs	83.1	Conserving energy	53.4
Woodworking	78.8	Occupational training, placement, & advancement	52.5
Small engines	77.1	Soil judging	42.4
Livestock nutrition	71.2		
Soil classification & land use evaluation	66.9		

READABILITY ON STUDENT UNDERSTANDING IN VOCATIONAL AGRICULTURE

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INTRODUCTION

The report "A Nation at Risk" has drawn the attention of educators and non-educators alike to the need for dramatically improving our educational system in the United States. The lack of "basic skills" reported by many students and the declining scores on national achievement tests are overwhelming evidence of this need.

Reading is generally considered one of the most important "basic skills" and has been studied for years. As early as 1923, Lively and Pressley were writing about methods of measuring the readability of textbooks. The accumulation of reading theory and reading research has developed to the point where specialized training programs in reading are offered by most teacher preparation institutions in the United States.

The reading specialists have worked to enhance the reading ability of students in a variety of ways. One commonly prescribed procedure has been to select subject matter texts that were not beyond the reading ability of students. Initially, such a recommendation seems logical and well advised. Researchers, such as Gunning (1952), Frye (1968), and McLaughlin (1969), have devised formulas by which even "non-experts" in reading can access the reading levels of written materials.

The result of the continued emphasis upon "reading formulas" which have placed emphasis upon sentence length and vocabulary has been for publishers to prepare and sell textbooks with prescribed "readability" levels. Some reading experts have even urged textbook publishers to make available texts at several different reading levels so teachers can match students' reading ability with the readability of their textbooks.

Former Secretary of Education T. H. Bell, speaking before the American Association of School Administrators in Las Vegas on February 25, 1984, labeled such practices as "dumbing down" of textbooks and appealed to educators and textbook publishers to join him in a drive to stop it. Secretary Bell contended that textbooks written for "the bottom of the class" were obstructing the drive to raise school standards in America (Christopher, 1984).

Thousands and thousands of dollars are spent annually on printed subject matter reference materials used in vocational agriculture programs in this country. Such materials are provided by a variety of public and private agencies, all of whom are attempting to provide a product that will provide the needed information in a form which will enhance student understanding and which students can read and comprehend. All of this effort has been largely guided without any basis in research as to "what" or "how". Mulcahy (1981) and Schimpp (1983) recently reported the effect of using references of varying readability and the effect of varying format styles on performance in vocational agriculture. While both studies are useful, neither provides definitive results.

PURPOSES AND OBJECTIVES

The purpose of this study was to ascertain the effect of readability of printed matter references used in vocational agriculture programs upon student understanding.

The objectives for this multiple phase longitudinal study on readability were designed to meet the stated purpose and are listed below:

1. Determine the reading ability of vocational agriculture students in grades 9 and 10.
2. Measure the "readability" of student references specifically written for the "Core Curriculum" in vocational agriculture.
3. Experimentally, ascertain the effect of readability on student understanding as measured by cognitive examinations using a variety of resources and procedures.

PROCEDURE

This report covers one phase, namely the quasi-experimental determination of the effect on student understanding of a reference on soils written at two different reading levels controlling for both teacher influence and student reading ability. Previous phases of this Agricultural Experiment Station study conducted by McCormick and Zurbrick have shown no difference in understanding between references written at two different reading levels when used in the normal classroom with normal teacher interaction. Thus, the intent of this phase of the study was to attempt to measure the effect of readability of written material controlling interactive teacher influences. To this end, the teaching procedure was rigidly prescribed. Students were provided study guides containing study questions for each reading assignment. Normal teacher directed discussion was eliminated so as to limit student knowledge to that derived from the printed reference material.

A randomized block design was employed with students blocked by natural occurring classroom assignments. Only classrooms situated in secondary schools offering two classes of either freshman or sophomore vocational agriculture were included in the study. The classrooms were randomly assigned to treatment or control groups. The classes in the control group utilized a student reference on soils written with a readability grade of 13 as measured by the SMOG. The readability of the soils reference used by the treatment group was 9 as measured with the same SMOG scale. All students in both groups completed the reading portion of the California Achievement Test (C.A.T.) level 18, form D. In order to control teacher influence, the teachers taught the unit for four days using prepared study questions without any class discussion. Students were assigned a certain number of pages to read. Following the reading period, students were asked to complete a written set of study questions. After four periods, the students were given a multiple choice examination consisting of 40 items written at the lower reading level.

RESULTS

The "Total Reading" scale scores for vocational agriculture students participating in this study ranged from 391 to 787 with the mean for all students measured at 579.391 as measured with the C.A.T. Thus, on the average, vocational agriculture students participating in this study were reading at the national norm for students of their grade level. The "Total Reading" mean scale scores as measured by the C.A.T. is shown in Table 1 for participating students at the freshman and sophomore levels.

The mean number of correct responses on the 40 item multiple choice soils examination used in this study was 18.1 for all students. Thus, the examination had a difficulty index of 45.25 as percent of right response. This difficulty factor is slightly lower than the desired norm of 50 percent. This is logically explained by the fact that the instructional time was limited to four periods as opposed to the norm of 10 periods. The mean number of correct responses by grade levels is shown in Table 1. Overall, the test had a measured reliability index of .84 based upon results with 323 students not included in this study.

While students were used as sampling units, classrooms were randomly assigned to the treatment and control groups. Thus, a randomized cluster sampling technique was employed. Table 2 reports the Total Reading Scale Scores for students in both groups along with the mean number of correct responses on the soil examination. The treatment group used the revised student reference written at the 9.0 grade level as measured with the SMOG scale. The control group studied from the exact same reference written at the 13.0 grade level as measured on the SMOG scale.

As shown in Table 3, there was no statistically significant difference between the two groups on the written, cognitive soils test. It is interesting to note that the control group using the reference with the higher readability level had a higher number of mean correct responses than the treatment group using the reference with the lower readability level.

Because of a concern over the effect individual student reading levels might have on the resulting soil test scores, further analysis was undertaken. An analysis of covariance (SPSS, ANOVA) was run on the resulting scores using the number of correct responses as the criterion variable and the treatment (two references) levels as the factors with the reading index as a covariant. The results are reported in Table 4. The main effect (references) still showed a non significant F value. The covariate (C.A.T. score) had a high F value (138.438) significant at the .001 level. One can conclude that reading ability as measured by the C.A.T. has a significant influence on test scores. Approximately 40 percent of the variance can be explained by the combined effects of the independent variable and the covariant.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the findings of this project and supported by additional studies conducted by the author, the following conclusions are offered.

Conclusions

1. Vocational agriculture students are not poor readers, but are reading, on the average, at the national norm for all students of their grade level and thus do not need special "dumbed down" reading materials.
2. Student references written for the Core Curriculum for vocational agriculture in Arizona tend to be written for reading levels above grades 9 and 10 as measured by both the Fry and SMOG scales and apparently do not reduce student understanding.
3. Removing the teacher from the teaching-learning process fails to result in any measurable effect on student understanding resulting from the use of student references written at grade level 13 versus grade level 9 as measured by the SMOG scale with vocational agriculture students in grades 9 and 10.

Based upon the results of this study and additional ones conducted by the author, several important recommendations are suggested which should be of value to teachers, teacher educators, writers and publishers.

Recommendations

1. Efforts to "dumb down" student references written for vocational agriculture students does not appear to enhance student understanding and should not be undertaken for references with readability in the range 9.0-13.0 as measured by the SMOG scale.
2. Vocational agriculture teachers can effectively use technical references on agricultural subjects written within a rather wide range (9th-13th grade) of readability as measured by the SMOG scale. However, it is recommended that emphasis be placed upon helping students understand technical words and assisting them in developing their vocabulary of agricultural terms.
3. Other researchers should avoid using the Fry or SMOG scales in attempting to measure the effect of readability on student understanding. Neither scale appears sufficiently sensitive to reflect the effect of readability on cognitive student test scores in the range of grades 9.0 to 13.0 when used with secondary students at the freshman and sophomore levels.
4. Other measures of readability should be investigated as a means of quantifying the effect of readability of subject matter texts in vocational agriculture. Consideration should be given to "concept loads" and other measures of reading difficulty as possible means of enhancing student understanding of written materials.
5. Publishers should not establish some arbitrary readability level for textbooks written for vocational agriculture students, but should establish a readability range and encourage authors to include commonly used technical terms in their manuscripts. The use of published readability levels for textbooks appears to be more of a marketing ploy than an educationally sound practice.

TABLE 1. Test Results by Academic Levels for California Achievement Test, Total Reading Scale Scores, and Soil Test Used in Vocational Agriculture Reading Project.

Academic Level	n	C.A.T. Total Reading Scale		n	SOIL TEST Correct Responses	
		Mean	SD		Mean	SD
Freshman	103	571.7*	63.81	100	17.47	5.21
Sophomore	112	586.5**	73.88	111	18.74	6.18

*Standardized "Total Reading" Mean Grade 9.2 = 565
**Standardized "Total Reading" Mean Grade 10.2 = 587

TABLE 2. Mean Number of Correct Answers and Mean California Achievement Tests, Total Reading Scale, Score for Both Treatment and Control Groups Participating in Vocational Agriculture Reading Project.

Academic Level	n	C.A.T.		n	SOIL TEST Correct Answers	
		Mean	SD		Mean	SD
Treatment	125	566.52	64.59	121	17.56	5.66
Control	90	597.27	72.37	93	18.83	5.81

TABLE 3. t-Test of Difference Between Group Mean Soil Test Scores Using Soils Reference Written at Two Different Readability Levels.*

		Mean	SOIL TEST	
Groups (SMOG Scale)	n	Correct Responses	SD	Standard Error
Control (13.0)	93	18.82	5.81	.603
Treatment (9.0)	121	17.56	5.66	.515

*A highest possible score was 40.0 (t=1.60; p=.11, using pooled variance estimate).

TABLE 4. Analysis of Covariance in Test Scores by Treatment Groups with California Achievement Test (C.A.T.-Total Reading) Score Used as Covariant.

Source of Variance	Sum of Squares	df	Mean Square	F	Significance of F
Main Effect Reference*	67.123	1	67.123	3.366	.068
Covariate C.A.T.**	2760.455	1	2760.455	138.438	.001
Explained Variance	2827.578	2	1413.789	70.902	.001
Residual Variance	4007.932	201	19.940		
Total	6835.510	203	33.672		

**Total Reading Scale Score as measured by California Achievements Tests Form D Level 18.

*Soils references with readability levels of 13.0 and 9.0 as measured with SMOG Scale.

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STUDENT PERFORMANCE IN VOCATIONAL AGRICULTURE - A CRITIQUE OF RESEARCH

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INTRODUCTION

For several years, the profession serving vocational education in agriculture has been concerned with development of technical agriculture skills by students enrolled in the program. More recently, partially due to the renewed emphasis on basic skill development, there has been considerable concern regarding how effective vocational agriculture programs are in helping students develop reading, writing, and computational skills.

This paper reviews three research reports which deal with student performance. One involves computational skills, one technical agriculture skills, and the last deals with readability and student performance in agriculture. They are: "Mathematical Problem-Solving Skills of High School Vocational Agriculture Students and Undergraduate Students in Agricultural Education" by Drs. Joe A. Gliem and J. Robert Warmbrod of The Ohio State University, "Technical Agriculture Knowledge Level Attained by Students Enrolled in Vocational Agriculture II Classes" by Dr. Joe Kotrlik and Messrs. Gaylon Parton and Mark Lelle of Louisiana State University, and "Readability on Student Understanding in Vocational Agriculture" by Dr. Phillip R. Zurbrick of the University of Arizona.

Remarks regarding these three reports are intended to promote discussion, improvement, and application of research procedures and results.

MATHEMATICAL PROBLEM-SOLVING SKILLS OF HIGH SCHOOL VOCATIONAL AGRICULTURE STUDENTS AND UNDERGRADUATE STUDENTS IN AGRICULTURAL EDUCATION

This study investigated level of competence of undergraduate agricultural education majors and high school vocational agriculture students on a 20-item Mathematical Problem-Solving Test. It also measured the relationship between high school students' scores and number of math courses taken, gender, class rank, grade level, use of calculators, and mode in which questions were presented.

Results revealed that undergraduates scored an average of 62.5%, with no difference between junior and senior students. High school vocational agriculture students scored an average of 40%. Scores were positively related to number of math courses completed, class rank, use of calculators, sex (with females scoring higher), and test form (with scores higher on tests containing math functions only).

The major strengths of this study include a relatively high reliability coefficient and use of an effective analysis technique. Regression analysis was used to allow determination of the amount of variance in the criterion variable that could be attributed to each predictor variable, with a total of 62% of the variance being accounted for by a combination of five variables.

This technique was not used to full advantage, though, since total variance was reported in the paper, but the contribution of each variable was not. Other points needing clarification include:

- the relevance of the introduction to the purpose and objective.
- procedures used in validating the instrument.
- the percentage of the intact groups that responded to the questionnaire.
- the extent of external validity with the type of sample used.

There are also two or three statements that should be reconsidered. On page 7, it is stated that "Twelfth-grade students scored higher than eleventh-grade students who, in turn, scored higher than tenth-grade students. These differences were not statistically significant, however." This actually means that we cannot deny that error contributed to the apparent difference. In effect we should refrain from the temptation of saying that one group scored higher than another. Another statement, on page 11, says "First, the evidence is clear that vocational agriculture students' inability to solve mathematical problems is partially a function of teachers' level of competence to solve mathematical problems." We would probably all agree that this is a true statement, yet the truth is that this study didn't even deal with this question.

A third statement, on page 11, is that to enhance mathematical problem-solving ability, vocational agriculture students should enroll in algebra, geometry, and other advanced mathematics courses. At first glance, this is certainly a reasonable recommendation; however, on second glance, none of the 20 questions seem to require more than junior-high mathematics.

This study has practical value in what it shows about the use of calculators and in the general math skills possessed by high school and undergraduate students in agricultural education. Possibly more important, though, is the implicit philosphical question raised, that is, is it our job to teach all skills needed in agricultural occupations? Where is the line drawn?

TECHNICAL AGRICULTURAL KNOWLEDGE LEVEL ATTAINED BY STUDENTS ENROLLED IN VOCATIONAL AGRICULTURE II CLASSES

Patterned after a research study completed in Florida by Cheek and McGee, this study sought to assess the level of agricultural knowledge attained by Agriculture II students in Louisiana. Also assessed were the influence of FFA membership, supervised occupational experience (SOE) participation, economically disadvantaged or special needs status, and student's race. Teacher variables and their influence were also investigated. They included age, educational level, part-time work status, and years of teaching experience. The extent that topics listed in the Louisiana basic curriculum guide were taught was measured, too.

Results showed an average attainment level of 55% with a standard deviation covering almost one-third of the possible range. Statistically significant and practically significant differences were found favoring FFA membership, being white , being neither disadvantaged or special needs students, and SOE participation. Teacher variables did not show significant differences in students' scores.

The paper was enhanced by the well-written introduction which led directly to clearly stated objectives. Test reliability was established by an internal consistency coefficient of .87 on the Kuder Richardson 20. The sampling technique used was satisfactory and the check on non-response bias was very good.

Questions that would benefit from clarification include the following:

- How well does a test of 52 questions measure a year long course, especially when no evidence is presented showing the questions to be a sample from a population? Additionally, one could question the difficulty level of the questions.
- How consistently did the teachers judge content validity? Did they consider whether or not the questions were written at the same cognitive level as the objectives? Were the teachers trained in the job they were asked to do? Were there any objectives which required other than cognitive performance? If so were there questions for these? Were more questions provided for higher level cognitive questions than lower level ones?
- How was SOE participation defined? Was it a valid measure? Was it consistent from one teacher to another? The same can be asked about some other student variables.
- Why was a multivariate analysis technique not used to account for all attribute variables at one time? With the one-way analysis of variance, how is teacher effect controlled when student variables are investigated? How is student effect controlled when teacher variables are investigated? Was interaction considered?

As in the Florida study reported in 1984, this study raises some good points dealing with what teachers are teaching and what students are learning.

READABILITY ON STUDENT UNDERSTANDING IN VOCATIONAL AGRICULTURE

The purpose of this study was to determine the effect of reading level of vocational agriculture materials on student understanding. No difference in understanding as measured by a 40 item multiple choice examination was found between students using soils materials written at two different reading levels - ninth and thirteenth grades.

Strengths of this study include the control of teacher influence with a very structured research procedure, a determination of difficulty of the test, and achievement of a satisfactoy reliability coefficient. Even though it is not explicitly offered in the paper, there is also evidence of this being a part of some programmatic research, for which the author is to be commended.

Questions which can be raised about this research include the following?

- Was consideration given to validity of the test instrument?
- Is the premise on which the study is based an acceptable one? It seems that materials are written at lower levels to help "poor" readers. Readers in this study were measured to read "normally" on the CAT.
- On the other hand, is it possible that the materials written at a lower level did help the treatment group, which was comprised of poorer readers in spite of randomization. To clarify, Freshmen scored 571.7 on the CAT and Sophomores scored 586.5, standardized scores of grade 9.2 and 10.2, respectively. This is a one-grade level difference. When the treatment and control groups were comprised, their CAT scores were

566.52 and 597.27, respectively. This difference in reading ability is is twice as large between treatment and control groups as between freshmen and sophomores. The treatment group, with the weakest reading scores, used the 9th grade level materials and scored as well as the better readers, the control group on the soils test. This means that a group that read at about grade level 8.7 scored as well on the soils test as a group reading on approximately grade level 11. (These grade levels are estimated.)

-What is the evidence in this study for the recommendation that the Fry or SMOG scales of reading difficulty not be used?

-Can generalizations be made from this study to "all" vocational agriculture students, as inferred in conclusion 1.

It is good to note that publishers go to considerable effort to write textbooks at certain reading levels. It is, therefore, a legitimate topic for research in agricultural education.

SUMMARY

It is good to see our profession concerned about whether our students are learning as they should. After all, causing students to learn is our main job. It is also encouraging to see our research grow sounder year by year. Commendations are due the authors of these reports for contributing to this effort.

A NATIONAL STUDY OF RECOMMENDED CURRICULA FOR EXTENSION EDUCATION METHODS CLASSES AND STUDENT INTERNSHIP PROGRAMS

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A. INTRODUCTION

A NATIONAL STUDY OF RECOMMENDED CURRICULA FOR EXTENSION EDUCATION METHODS CLASSES AND STUDENT INTERNSHIP PROGRAMS

Since the passage of the original Smith-Lever Act in 1914, colleges of agriculture have prepared people to work for the Cooperative Extension Service, as researchers, field agents, and administrators. Informing the public of the results of successful practice was the foundation of the extension service. The role of the local agent of the Cooperative Extension Service as an agent of change was a key to helping to extend the adoption proven successful practices.

The role of the Cooperative Extension Service (CES) agent had changed considerably from the days when the agent's primary purpose was to provide general assistance to the rural community as a non-formal educator. More subject matter specialists had been utilized in the extension service to fill the need for technical expertise. The local agent's role had become more of a "contact" person (National Advisory Council, 1972).

The role of the extension agent had changed considerably from the days when the agents main purpose was to be a catalyst for change and to teach. In the present society, the complexity and diversity of the information in the area of agriculture, as well as the role of various agents in modern communities, had made it practically impossible for the agent to know all one needs to know to solve or answer the variety of problems which confront the agents. As more subject matter specialist had been utilized in the extension service to fill the need for technical expertise, the role of the local agent had become more a "contact" person (National Advisory Council, 1972) .

Legacy (1981) outlined eight roles the local advisor had been involved with as: advisor, evaluation, pedagogical, planning, referral, technician, translator, and youth.

The National Advisory Council on Extension and Continuing Education (1972) expressed concern about the ability of the colleges of agriculture and home economics to "... continue to respond effectively to the shifting priorities of the Extension Service" (p. 59). At the same time, the council expressed confidence in the Cooperative Extension Service as being "... a system that had worked historically and has given convincing evidence that it can adjust to contemporary needs." (p. 59).

Educational institutions have trained and supported the Cooperative Extension Service through pre-service training and in-service training, research, and other resource means. It has been necessary for the institutions to change with the needs of the presents time, while also preparing for the future. Evaluation has been an essential component of this change process. Several key questions were listed by Wood and Davis (1978) concerning the evaluation of academic curriculum and its quality:

(1) Does the curriculum reflect key issues, recent developments and contemporary ideas dominant in the field?

(2) Is the curriculum free of obsolete ideas? (3) Does it provide adequate coverage of the field? (4) How adequately are the various components of the curriculum integrated? (5) Does a coherent "whole" emerge from an assembly of various course offerings?" (pp. 57-58).

These questions were appropriate for evaluating the suitability of curriculum concerned with extension program development and methodology, including teaching methods.

Memmesheimer (1983) indicated that needs existed for the evaluation of curricula for undergraduate extension education methods classes and student extension internships.

B. PURPOSES AND OBJECTIVES

The purpose of this research was to determine: What extension education methods and other course content items did experienced extension agents consider important as instructional topics for an undergraduate extension education methods class and student internship program.

The objectives were:

1. What were the important items to be taught in a university extension education methods class.

2. What were the important items to be taught during an extension education student internship program.

C. PROCEDURES

1. Professors from seventy colleges of agriculture in the United States were asked to provide the researchers with names of experienced and highly competent extension agents. A request was made to provide one name for the three program areas of youth, home economics, and agriculture. Forty-five colleges from forty-three states returned 135 usable names of agents.

2. A questionnaire, used in a previous study (Memmesheimer, 1983) was modified for use in surveying CES agents. A list of nineteen extension education instructional topics identified by the Memmesheimer study were selected as the studies dependent variables. The nineteen items were listed in two categories; (1) general topics(n=7), and (2) extension method topics(n=12). Each item was rated for course importance and internship

program importance, using a rating scale range of, 4 = high importance; 3 = important; 2 = some importance; to 1 = low importance.

3. A pretest of the questionnaire was completed by eleven CES agents from Southern Illinois who had had five or more years of experience as an agent.

4. The study sample of 135 agents from forty-three states was mailed a survey packet containing a revised cover letter and questionnaire, and a pre-addressed, postage-paid envelope. Those who had not responded within three weeks were mailed a reminder card. The total response from agents was 116 or 85.9 percent.

5. The data were examined by program area (agriculture, home economics, and youth) and by comparing the level of importance assigned to each topic for use in the extension methods class and the student internship program. The descriptive statistics used to analyze the studies data included frequency response, means, rank orders, percentages, and Spearman's rank order correlation. The alpha level of significant correlation for the Spearman's rank order analysis was set at 0.05.

D. RESULTS

The results of the study indicated that each of the nineteen topic items were recommended as either high or medium importance for both the extension method class and the student internship program. The three instructional items with the highest importance scores were 'Program Planning and Maintenance'(68.5), 'Media Presentations'(69.2), and 'Program Evaluation'(67.2).

TABLE 1

Percent of cooperative extension agents assigning high importance and importance responses to extension education methods and general topics 1984.

ITEM	HIGH IMPORTANCE	IMPORTANT
General Topics		
Program Planning & Maintenance	68.5	28.3
Program Evaluation	67.2	27.3
Volunteer Recruiting, Training and Management	66.6	26.4
Committee Involvement	64.6	26.8
Cooperative Extension Service History	41.4	41.8
Extension Reporting Methods	36.6	33.2
Cooperative Extension Service History	21.2	45.6
Extension Education Methods		
Media Presentation	69.2	26.9
Time Management Training	63.0	26.9
Result & Methods Demonstrations	61.1	32.2
Microcomputers as a Teaching Device	60.2	31.4
Radio	54.3	42.2
Personal Visits	53.3	28.5
Extension Meetings	52.5	33.8
Television Video	46.9	45.3
Clinic & Short Course	40.4	46.5
Tour & Field Days	38.4	42.7
Educational Exhibits	30.8	50.3
Extension & Politics	29.5	41.6

Differences were found in the order of importance of the 19 extension education instructional topics between the learning environments of class and internship. Differences also existed in the rank order of item importance by the type of CES agent.

The seven general topic items, see TABLE 2, and twelve methods items, see TABLE 3, were ranked according to the High Importance rating of the agents' responses. The Spearman's rank order correlations from tables two and three indicated differences existed in importance rankings for both general topics and extension methods topics between the extension education methods class and the student internship program.

TABLE 2
RANKING OF EXTENSION EDUCATION GENERAL INSTRUCTIONAL
TOPICS BY CES AGENTS 1984
N = 116

ITEM	COURSE	INTERNSHIP
Program Planning and Maintenance	1	1.5
Program Evaluation	2	4
Volunteer Recruitment, Training, and Management	3	3
Committee Involvement	4	1.5
Cooperative Extension Service Organization	5	6
Cooperative Extension Service History	6	7
Extension Reporting Methods	7	5

Spearman's Rank Correlation 0.706
degrees of freedom 5
critical value at 0.05 alpha level . . 0.786

TABLE 3
RANKING OF EXTENSION EDUCATION METHODS INSTRUCTIONAL
TOPICS BY CES AGENTS 1984
N = 116

ITEM	COURSE	INTERNSHIP
Microcomputer as a Teaching Device	1	8
Media Presentation	2	5
Time Management Training	3	6
Personal Visits	4	1
Extension Meetings	5	2
Result and Demonstration	6.5	3
Radio	6.5	9
Tour and Field Days	8	4
Television/Video	9	10
Clinic and Short Courses	10	7
Extension and Politics	11	12
Educational Exhibits	12	11

Spearman's Rank Correlation 0.539
degrees of freedom 10
critical value of 0.05 alpha level . . 0.591

When grouped by the independent variable, type of agent, the ranking of the seven general topic items resulted in significant correlations for comparisons between: agriculture to home economics; agriculture to youth; and home economics to youth.

TABLE 4
RANKING OF GENERAL TOPICS BY AGRICULTURE HOME ECONOMICS, AND YOUTH AGENTS, 1984
N=116

ITEM	AGRICULTURE	HOME ECONOMICS	YOUTH	COMBINED
Program Planning & Maintenance	1	1	1	1
Committee Involvement	2	2	4	3
Volunteer Recruitment training and management	3	3	2	2
Program Evaluation	4	4	3	4
Cooperative Extension Service Organization	5	5	5	5
Extension Reporting Methods	6	6	6	6
Cooperative Extension Service History	7	7	7	7

Spearman's rank correlation for agricultural/ Home Economics Agents 1.000

Spearman's rank correlation for Agricultural/ Youth Agents 893

Spearman's rank correlation for Home Economics/Youth Agents 893

degrees of freedom 5

critical valve of 0.05 alpha level 0.786

The rank order analysis of the twelve extension method items provided non-significant correlations between 1) agricultural and home economics agents and 2) agricultural and youth agents, indicating that differences existed in topic importance by type of agent. The differences were, agricultural agents placed more importance on the items of 'Personal Visits', 'Extension Meetings', and 'Tours and Field Days'. While home and youth agents placed more important on the items of 'Radio' and 'Television/Video'. A significant positive correlation was found in the extension method topics rank order of importance comparison between home economics and youth agents (see TABLE 5).

TABLE 5
RANKING OF EXTENSION METHODS TOPICS BY AGRICULTURE HOME ECONOMICS, AND YOUTH AGENTS 1984
N = 116

ITEM	AGRI-CULTURE	HOME ECONOMICS	YOUTH	COMBINED
Microcomputer as a Teaching Device	1	4	5	3
Media Presentation	2	1	2	1
Time Management Training	3	2	1	2
Personal Visits	4	12	9	7.5
Extension Meetings	5	10	10	7.5
Radio	6.5	3	3	4
Result and Method Demonstration	6.5	5.5	5	5
Tour and Field Days	8	11	12	12
Television/Video	9	5.5	5	6
Clinic and Short Courses	10	8	8	9
Extension and Politics	11	9	7	10
Education Exhibits	12	7	11	11

Spearman's rank correlation for Agricultural/ Home Economics Agents 0.412

Spearman's rank correlation for Agricultural/ Youth Agents 0.515

Spearman's rank correlation for Home Economics/ Youth Agents 0.882

degrees of freedom 10

critical value of 0.05 alpha level 0.591

E. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. Cooperative Extension Service agents reported that each of the studies 7 general instructional topics and 12 extension methods instructional topics were either most important or important items to be taught in an extension education methods class and a student internship program. However, differences were found in the rank order comparison of item importance between class and internship.

2. Differences were found by type of agent in reporting importance preferences for teaching extension methods. Agricultural extension agents reported an importance preference for 'Personal Visits', Tours and Field Days' and 'Extension Meetings. Youth

and Home agents reported a greater importance for 'Radio' and 'Television/video'. No differences were found by type of agent in reporting importance preferences for the seven general extension topics.

Recommendations

1. Whereas; each of nineteen extension education instructional topics received a rating of high importance or important; colleges providing methods classes and an internship program for extension should review major content topics with the results of this study.

2. Whereas; a rank order comparison of extension education instructional topics between class and internship reported differences; class and internship programs should teach similar topics, but with emphasis on different topics.

3. Whereas; a difference in instructional importance existed between type of agent; extension education method classes and internships should be offered separately by type of agent or should allow for a variance of instructional topic importance when offered in a single program.

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THE EXTENT OF BURNOUT AMONG FACULTY IN AGRICULTURE

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INTRODUCTION

Faculty in higher education face increasingly greater challenges in their work. Agriculture faculty are no exception. Edgerton (1980) indicated that a recent study showed that 96% of faculty believe that students are seriously deficient in basic skills. This forces faculty to increase time spent on remediation. In addition, many faculty in agriculture are frustrated with the fact that an increasing number of students lack an agricultural background thereby making group instruction more difficult.

Role ambiguity also characterizes the faculty situation. This is especially true for agriculture faculty with split appointments in research or extension. With role ambiguity comes frustration which leads to strain.

Future career prospects also have an influence on the vitality of faculty members. The academic career of the university faculty of today is different from that of the 1950's or 1960's. "During the 1950's and 1960's, the size of college and university faculties increased dramatically to accommodate the boom in enrollment. Faculty enjoyed a high degree of mobility and, with it, the leverage for increasing salaries and perquisites" (Novotny, 1981, p. 2). Faculty members can tolerate present positions as long as they think they can move on to better positions. Unfortunately, faculty are becoming more immobilized. According to Edgerton (1980), the demand for services is lessening, and a large percentage (48%) of the faculty are in the middle age category between 35 and 50. Of these, 56% of the full-time faculty are tenured. These conditions lead to limited turnover and, therefore, less job mobility. Current faculty members may spend the next 25 years in their present positions. In a sense, they are trapped.

The combination of tight economic times, decreased job mobility, role ambiguity, job overload, lower job satisfaction, frustration and a need for personal growth make faculty members prime candidates for "burnout."

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the extent of burnout among faculty in the College of Agriculture at The Ohio State University. Additionally, the study sought to determine the relationship of job satisfaction and coping skills to burnout.

The study was designed to answer the following research questions:

1. What is the extent of burnout among faculty in Agriculture at The Ohio State University?
2. To what extent is burnout correlated with job satisfaction and coping skills?

3. What differences are there in levels of burnout among three groups of faculty, i.e., 100% resident instruction, $\geq$50% research with remainder of appointment in resident instruction, and $\leq$50% research with remainder of appointment in resident instruction?

PROCEDURES

Population and Sample

The population for the study consisted of all faculty in the College of Agriculture on the Columbus campus with appointments in resident instruction and/or research (N=88). The population was stratified into three groups: faculty with 100% resident instruction appointments, 50% or greater research appointments (combined with resident instruction), and less than 50% research appointment (combined with resident instruction). A census was conducted for the 100% resident instruction group (N=15) and the $\geq$50% research group (N=31). A 50% random sample was drawn from the <50% research group (n=21). Thus, the sample consisted of 67 people. The response rate from this group was 94%.

Design of the study

This was a descriptive-correlational study.

Instrumentation

Demographic data were gathered using a survey form developed by the researchers. The principle variable of interest, burnout, was measured using the Maslach Burnout Inventory (MBI) which was titled "Human Services Survey" to avoid preconditioning the respondents. The MBI measures the aspects of the burnout syndrome: emotional exhaustion, depersonalization, and personal accomplishment using three separate subscales. The emotional exhaustion subscale measures feelings of being overextended and exhausted by one's work. With depersonalization, feelings of impersonal responses and responses without feeling toward one's students are measured. The personal accomplishment subscale measures feelings of competence and successful achievement as related to working with students. Each of the subscales has two dimensions, i.e., frequency with which one experiences the feeling and intensity or strength of the feelings when they are present.

Maslach has previously validated the instrument and demonstrated its reliability. Reliability checks (Cronbach's alpha) were computed for the subjects of this study and the coefficients for the six burnout scores (three subscales, two dimensions each) were all above $r = .70$.

In order to measure the coping ability of faculty, the Personal Resources Questionnaire (PRQ) developed by Osipow and Spokane (1983) was used. This instrument measures four sets of coping behaviors: self-care behavior, which gets at one's propensity to follow healthful habits; social support systems, which emphasizes family, friends, and social groups; cognitive skills, which focuses on the ability to reduce stress through the effective management of one's time, effort, and reactions; and recreational activities, which reflects the use of recreation as a distractor from stressful events and as a source of satisfaction outside of work.

The PRQ has been validated and also shown to be reliable. The test retest reliability was $r = .88$ and the internal consistency was shown to be $r = .83$ using the Cronbach alpha procedure.

The instrument that was used to measure job satisfaction was used by Bowen (1980) as adopted from Wood and others. It is a job satisfaction/ dissatisfaction scale that measures Herzberg's ten satisfiers and dissatisfiers. Bowen demonstrated that the ten subscales were highly reliable ($r \geq .81$ for each of the ten subscales). Cronbach's alpha coefficients were recomputed from the data gathered in this study and the lowest was $r = .72$.

RESULTS

Description of Sample

The average faculty member was a married male forty-three years old. Eighty-four percent of the faculty had children; 95% held a doctorate and 79% were tenured; 27% were assistant professors; 24% were associate professors; and about 48% were professors. About 21% held 100% resident instruction appointments; 49% held $\geq$50% research appointments (remainder of appointment in resident instruction); and 30% held appointments which were less than 50% research with the remainder being resident instruction. All were located on the Columbus campus.

Introduction to the Burnout Measure

There are three subscales in the Maslach Burnout Inventory: emotional exhaustion, depersonalization, and personal accomplishment. Each subscale has two dimensions; frequency and intensity. For emotional exhaustion and depersonalization the higher the score the more severe the state of burnout for the dimension being measured. In the case of personal accomplishment higher scores mean less burnout. Scores are considered to be high burnout scores if they fall in the upper third of the normative distribution as developed by Maslach.

Emotional Exhaustion

Seventeen percent of the faculty received scores that placed them in the high burnout classification on the frequency dimension (Table 1). On the intensity dimension about 14% of the faculty were in the high burnout category (Table 1). This means that these faculty were working while

Table 1

Burnout Scores

	MBI Subscales											
	Emotional Exhaustion-Frequency		Emotional Exhaustion-Intensity		Depersonalization—Frequency		Depersonalization—Intensity		Personal Accomplishment-Frequency		Personal Accomplishment-Intensity	
Level of Burnout	N	%	N	%	N	%	N	%	N	%	N	%
High	10	17.2	8	13.8	9	15.5	15	25.9	16	29.1	27	48.2
Moderate	22	38.0	26	44.8	27	46.6	30	51.7	22	40.0	14	25.0
Low	26	44.8	24	41.4	22	37.9	13	22.4	17	30.9	15	26.8
Totals	58	100	58	100	58	100	58	100	55	100	56	100
Mean	20.379		29.121		6.893		10.638		36.182		38.446	
SD	8.598		9.450		4.318		6.008		6.979		7.079	

having feelings such as: "I feel emotionally drained from my work," "I feel used up at the end of the work day," and "I feel like I'm at the end of my rope."

Depersonalization

About 15% of the faculty received high burnout scores in the area of depersonalization on the frequency dimension (Table 1). Twenty-six percent of the faculty had such intense depersonalization perceptions that they were placed in the high burnout category (Table 1). This means they scored high on such items as "I feel I treat some recipients as if they were impersonal objects," "I don't really care what happens to some of my recipients," and "I worry that this job is hardening me emotionally."

Personal Accomplishment

Thirty percent of the faculty scored in the high burnout category for the frequency dimension (Table 1) of personal accomplishment and on the intensity dimension 48% were in the high category (Table 1). Hence, faculty in the high burnout category for this subscale do not feel they "deal very effectively with the problems of my recipients," are not "positively influencing other people's lives through my work," and do not feel "very energetic."

Job Satisfaction

For job satisfaction an overall score was computed as well as scores for ten different subscales. Figure 1 provides an overall summary of these data.

This instrument consisted of a six point scale with 1 being very dissatisfied and 6 being very satisfied. The mean for the overall scale was 4.1. Eighty percent of the faculty indicated they were slightly, moderately, or very satisfied. However, further examination by subscales is necessary to gain a detailed perspective of the level of satisfaction of the faculty. The data for each subscale appear in Table 2.

There were a number of areas where the faculty expressed very high levels of satisfaction viz. achievement, interpersonal relations, the work itself, and, to a slightly less extent, responsibilities. Areas with levels of dissatisfaction that are notable were advancement, policy and administration, recognition, salary, supervision, and working conditions. In each case, at least 30% of the faculty were slightly, moderately, or very dissatisfied. At least 16% of the faculty were moderately or very dissatisfied with policy and administration, salary, and supervision.

Resources for Coping

The resources for coping instrument contained subscales that dealt

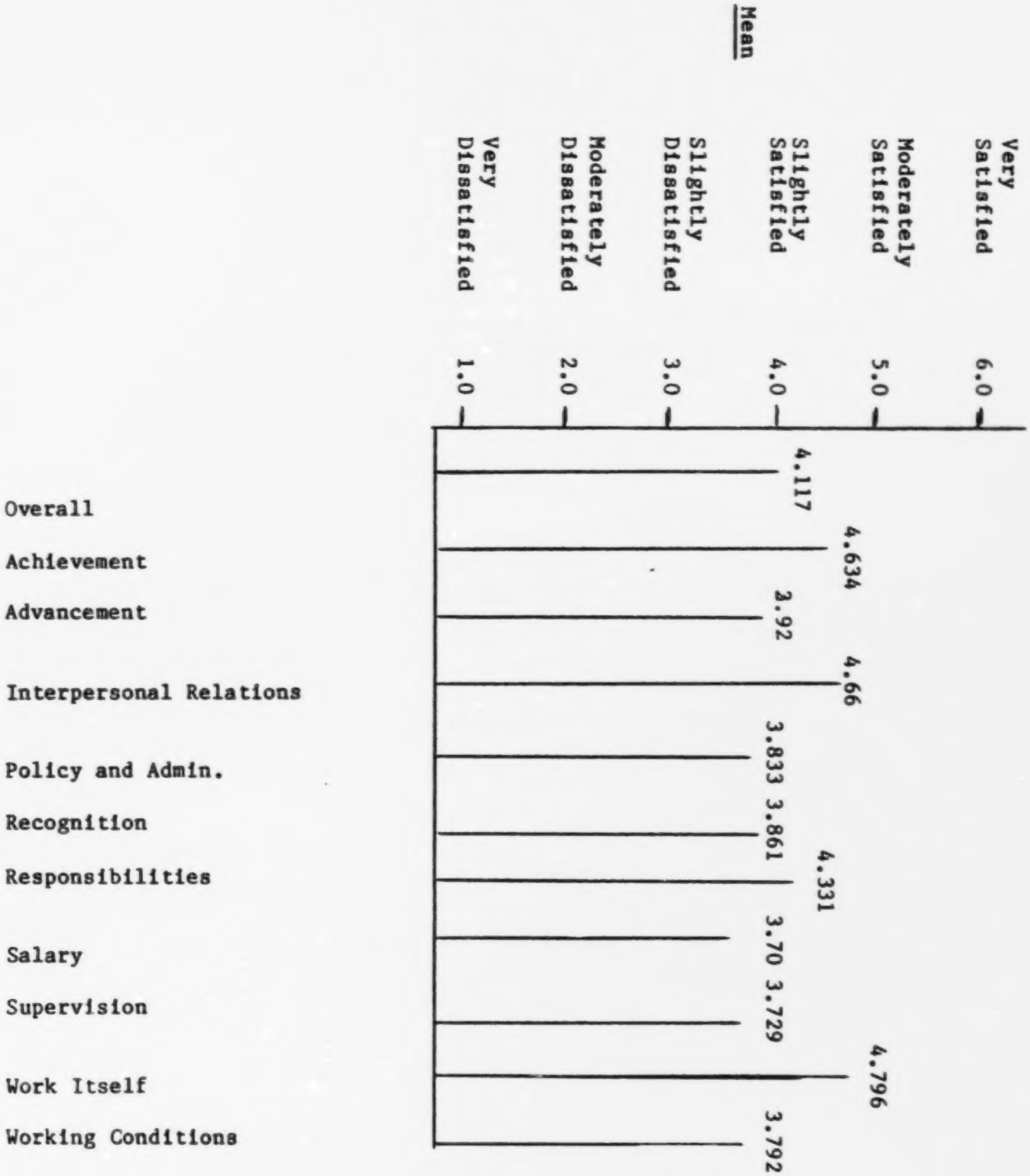

Figure 1. Mean Job Satisfaction Scores by Subscales and Overall

ble 2

Frequency Distribution of Job Satisfaction Scores by Subscales.

	Job Satisfaction Subscales																			
	Achievement		Advancement		Interpersonal Relations		Policy & Administration		Recognition		Responsibilities		Salary		Supervision		Work Itself		Working Conditions	
Level of Satisfaction	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Very Dissatisfied (0.0-1.49)	0	0	1	1.6	0	0	1	1.6	0	0	0	0	3	4.8	3	4.8	0	0	0	0
Moderately Dissatisfied (1.50-2.49)	1	1.6	5	8.2	0	0	10	16.4	5	8.2	4	6.5	7	11.3	8	12.9	0	0	3	4.8
Slightly Dissatisfied (2.50-3.49)	1	1.6	13	21.3	4	6.6	10	16.4	15	24.6	9	14.5	10	16.2	17	27.5	5	8.1	23	37.1
Slightly Satisfied (3.50-4.49)	22	36.1	24	39.4	17	27.8	20	32.8	27	44.2	17	27.4	26	41.9	15	24.2	10	16.1	19	30.7
Moderately Satisfied (4.50-5.49)	32	52.5	14	22.9	33	54.1	16	26.2	10	16.4	23	37.1	13	21.0	13	20.9	34	54.8	15	24.2
Very Satisfied (5.50-6.00)	5	8.2	4.	6.6	7	11.5	4	6.6	4	6.6	9	14.5	3	4.8	6	9.7	13	21.0	2	3.2
Totals	60	100	61	100	61	100	61	100	61	100	62	100	62	100	62	100	62	100	62	100
Mean	4.634		3.924		4.66		3.833		3.861		4.331		3.70		3.729		4.796		3.792	
SD	.686		1.013		.696		1.155		.974		1.026		1.171		1.289		.816		.853	

BEST COPY AVAILABLE

with the individual's resources for coping in the areas of recreation, self-care, social support, and rational coping. Data are reported in Table 3. In the area of recreation about 10% of the faculty scored in the first quartile and 38% were in the second quartile. For self-care about 10% were in the first quartile and 52% were in the second quartile. Ninety-five percent of the faculty scored in the upper 50% on the social support subscale. Similarly, about 86% scored in the upper 50% on the rational coping subscale.

Relationship Between Burnout and Job Satisfaction

Pearson product moment correlations were calculated to determine the degree of relationship between burnout and job satisfaction (Table 4). For the emotional exhaustion (frequency) subscale there was a substantial negative relationship indicating that as burnout increases job satisfaction decreases. There was a moderately negative relationship between the emotional exhaustion (intensity) scores and job satisfaction. The remainder of the relationships were low to negligible and generally negative.

Relationship Between Burnout and Personal Resources for Coping

As can be seen in Table 5 the relationships between burnout and coping were mixed. The most sizable correlations were between emotional exhaustion (both dimensions) and recreation and self-care scores. These correlations were low to moderate.

Differences in Burnout, Job Satisfaction, and Coping Scores by Type of Appointment

The data were analyzed to determine if there were differences in burnout, job satisfaction, or coping scores among the three groups: those with research appointments of 50% or greater, those with a 100% teaching appointment, and those with any other combination of research and teaching appointments.

For burnout the only significant difference was on the personal accomplishment (frequency) sub-scale (Table 6). The faculty with $\geq$50% research appointments had significantly lower scores than the other two groups of faculty, which means they experienced more burnout (interpret scores inversely for this subscale) than the other two groups.

Table 7 reveals the ANOVA results for job satisfaction scores. The 100% resident instruction group had significantly higher job satisfaction scores than the <50% research (remainder resident instruction) group.

No significant differences were revealed in the scores of the three groups on the PRQ scores.

Table 3

Personal Resources for Coping Scores

	Personal Resources for Coping Subscales							
	Recreation		Self Care		Social Support		Rational Coping	
Qaurtile	N	%	N	%	N	%	N	%
First (10-19)	6	9.5	6	9.5	0	0	0	0
Second (20-29)	24	38.1	33	52.4	3	4.8	9	14.3
Third (30-39)	30	47.6	23	36.5	13	20.6	28	44.4
Fourth (40-50)	3	4.8	1	1.6	47	74.6	26	41.3
Totals	63	100	63	100	63	100	63	100
Mean	29.175		27.794		43.127		37.19	
SD	6.467		5.99		6.079		6.024	

Table 4

Relationship Between Job Satisfaction and Burnout Subscales

n = 57

	Emotional Exhaustion		Depersonalization		Personal Accomplishment	
Variable	Frequency	Intensity	Frequency	Intensity	Frequency	Intensity
Job Satisfaction	-.61	-.43	-.23	-.16	.07	-.03

Table 5

Relationship Between Burnout Subscales and Coping Subscales

n = 58

Variable	Recreation	Self Care	Social Support	Rational Coping
Emotional Exhaustion: Frequency	-.46	-.31	-.13	-.22
Emotional Exhaustion: Intensity	-.37	-.15	-.15	-.08
Depersonalization: Frequency	-.20	-.13	.00	.00
Depersonalization: Intensity	-.11	.07	-.10	.17
Personal Accomplishment: Frequency	.05	.21	.06	.27
Personal Accomplishment: Intensity	-.08	.17	.00	.19

Table 6

Analysis of Variance of Personal Accomplishment Frequency Scores for Faculty by Type of Appointment

	Type of Appointment		
	50% or More Research	100% Instruction	Instruction & OARDC
n:	26	12	17
m:	33.4615	39.2500	38.1765
SD:	7.1902	6.7572	5.3763

Source	df	ss	ms	F
Between Groups	2	373.00	186.50	4.30*
Within Groups	52	2257.18	43.41	
Total	54	2630.18		

Mean	Group
33.46	50% or More Research
38.18	**Instruction & OARDC
39.25	**100% Instruction

*$p < .02$. **Means for 100% Instruction and Instruction & OARDC are significantly different from 50% or More Research at the .05 level.

Table 7

Analysis of Variance of Job Satisfaction Scores for Faculty by Type of Appointment

	Type of Appointment		
	50% or More Research	100% Instruction	Instruction & OARDC
n:	29	13	19
m:	4.1283	4.4577	3.8663
		----------------------	----------------------a
SD:	.6260	.9775	.6551

Source	df	ss	ms	F
Between Groups	2	2.7066	1.3533	2.602*
Within Groups	58	30.1643	.5201	
Total	60	32.8709		

a-----------------Means are significantly different.

*$p < .08$

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. Burnout is present among faculty in Agriculture at Ohio State University to an extent that warrants action.
2. Burnout is highly correlated with job satisfaction.
3. Faculty are sufficiently dissatisfied with advancement, policy and administration, recognition, salary, supervision, and working conditions to suggest the need for action to improve these areas.
4. The faculty show good coping skills in the areas of social support and rational coping, but are not adequately utilizing the coping resources of recreation and self-care.

Recommendations

1. College administrators need to discuss the findings of this study and develop an action agenda to address concerns.
2. Administrators should examine areas of dissatisfaction and develop strategies they feel will enhance satisfaction.
3. Faculty should be apprised of the findings of this study and given information regarding the burnout phenomenon.
4. Sessions on coping strategies should be offered.
5. Faculty should be reminded of recreational programs on campus and encouraged to participate.
6. From the literature we know that some real keys to preventing burnout are social support systems (at work and at home), reduced overload, and opportunity to change the mix of one's work. Therefore, the College should encourage the development of social support systems in the departments and provide opportunities for, expectations to, and incentive required to have faculty alter the mix of their jobs periodically.

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AN ASSESSMENT OF MOTIVATIONAL FACTORS AFFECTING COLLEGE OF AGRICULTURE FACULTY INVOLVEMENT IN INTERNATIONAL DEVELOPMENT ACTIVITIES

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INTRODUCTION

Land grant college of agriculture involvement in international agriculture development activities rests on 1) a financial incentive, 2) a moral and ethical obligation in providing assistance to all people, 3) effective utilization of the scientific and technological talent available at these institutions, and 4) a means by which the quality of faculty and the educational programs of the institutions can be improved (Thomas, 1983). Understanding development's dominant focus on agricultural and rural development, there is general agreement among AID personnel, developing country officials, and land grant university administrators that college of agriculture international programs should be improved, continued, and expanded (Whitaker, 1980; CIC-AID, 1968).

However, several recent studies (Management Analysis Center, 1982; Kiehl, 1980; Van Buren, 1984) have raised warning flags concerning future college of agriculture involvement in international development activities. The warnings indicate a decreasing involvement by college of agriculture faculty in these activities at a time when the need for faculty assistance exists and is projected to grow.

One reason for the decreasing faculty involvement is a perception that there is a great deal of risk and uncertainty for an individual faculty member to accept an international assignment (Whitaker, 1980). The reasons for this perception range from fear that an international assignment will not enhance their professional career to the fear that such an experience will not be considered favorably regarding appointments, tenure, and promotion to salary policies and organizational structures (CIC-AID, 1968; Management Analysis Center, 1982; Perez and Rogers, 1984). Even if approval was given from a dean or department head, an international assignment still represents a detour "...fraught with unknowns and diversions from professional activities that have required a relatively long gestation period" (Whitaker, 1980, p. 20).

The perception represents a significant problem for college of agriculture international contracts in that they will not be able to fill personnel needs on the contracts from within their faculty ranks. As a result, such contracts become little more than professional recruiting and consulting services impacting only on the financial base of college of agriculture involvement in international development activities. Such a practice satisfies neither AID's nor the university's requirements in providing technical assistance to the developing countries.

PURPOSE AND OBJECTIVES

Can the perception be changed? Many factors affect a faculty member's decision to become involved in international projects. One factor which has received very little research attention has been the basic "why" questions of faculty involvement. It was the purpose of this study to probe beneath the favorable attitudes which a select group of college of agriculture faculty have toward international development activities and attempt to assess their motivation for such involvement. By concentrating this study on the motivational factors, information will result which can provide a better understanding of faculty's background, personal characteristics, sources of original motivation for involvement, and strategies which can sustain that motivation. Such information can then be used to help maximize the contribution college of agriculture faculty can make to themselves, their university, and to the developing countries (Byrnes, 1965).

The specific objectives of the study were to:

1) Develop a profile of personal characteristics possessed by the select group of faculty.
2) Determine sources of their original motivation for involvement in development activities.
3) Develop strategies that can be used to stimulate and sustain faculty involvement in international assignments.

THEORETICAL FRAMEWORK

Motivation provided the theoretical base for this research "...because it aids in the understanding of why people behave the ways they do..." (West and Foster, 1976, p. 91). The specific theoretical framework used in the study was developed from the humanistic perspective of motivational psychology. As advocated by Carl Rogers and Abraham Maslow, the humanists emphasize that the goal of every person is to reach his/her full potential. Rogers uses self-actualization as the single, ultimate motive for behavior, while Maslow uses a system of multiple motives that are arranged in order of their strength for influencing behavior. As shown in Figure 1, the lower needs tend to have the stronger motivational strength and are more physiologically based. The higher order needs are weaker and are more psychologically based.

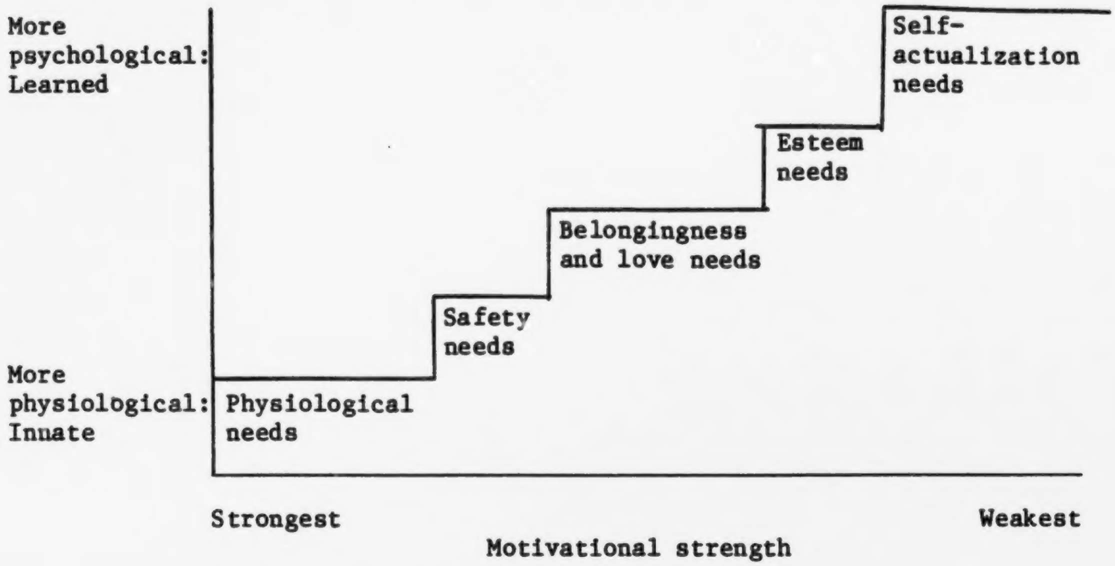
More psychological: Learned
More physiological: Innate
Physiological needs
Safety needs
Belongingness and love needs
Esteem needs
Self-actualization needs
Strongest
Weakest
Motivational strength

Figure 1. Maslow´s need hierarchy strength (Arkes and Garske, 1982, p. 126)

Humans are aware of themselves and their environment and do make continual choices about what to do. These choices are based on the person´s perception of what will be the outcome of certain behavior. The critical point for the humanists is to strive toward self-actualization through a cognitive process (Arkes and Garske, 1982).

Relationship of study´s objectives to a theoretical framework

The theoretical framework has been directly applied to the objectives in the research study. In terms of the first objective dealing with personal characteristics, the humanists argue that behavior tends to be determined, partially, by one or more of the person´s personal characteristic traits. Maslow (1954) and Hamilton (1983) argue that personal characteristic traits and motivation are inherently intertwined and cannot be separated. Each individual has particular personal characteristic traits which direct goal-seeking strategies to meet basic needs. Personal characteristic traits desired by individuals involved in international development activities have been identified (Moran and Harris, 1979; Byrnes, 1965). By having faculty indicate how they identify with these desired characteristics, it is possible to develop a personal characteristics profile of faculty and to determine if those traits do affect motivation for involvement in international development activities.

The second objective of the study was to determine sources of original motivation for faculty involvement in development activities. By studying the conscious experience of individuals, humanists believe that it is possible to assess the origin of motivational factors which influence behavior (Arkes and Garske, 1977). The importance of studying conscious experiences follows from the assumption of free will. People do make choices concerning motivational behavior through a cognitive process based on their goals. The choice, made from the perception of the individual, will then lead toward the attainment of that goal (Deci, 1975).

Deci (1975) goes on to argue that most behavior is motivated by both intrinsic and extrinsic factors. As illustrated in Figure 2, people decide what to do based on their perception of what the outcomes of that behavior will be, i.e., an instrinsic reward, an extrinsic reward, or a combination of both. Behavior which is motivated intrinsically, however, is the most desirable form of motivation (Davis, 1983).

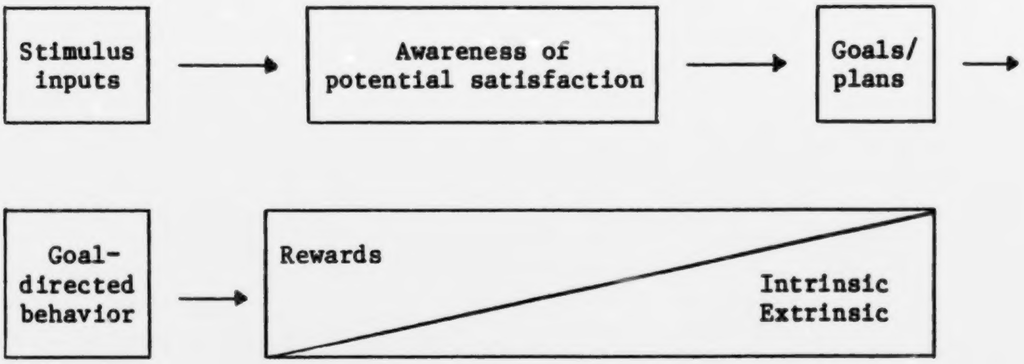

Figure 2. Motivation process (Deci, 1975, p. 98)

The instrument used in the study provided a means by which faculty could assess sources of original motivation for involvement in international development activities. These sources were identified on a basis of their intrinsic origin, extrinsic origin, or a combination of both. The results have implications for understanding why faculty initially become motivated for involvement in international activities.

The third objective of the study was to develop strategies that can be used to stimulate and sustain faculty involvement in international assignments. Maslow (1954) explains that motivational forces wax and wane as a result of attempting to satisfy different need categories. However, it is possible to enhance motivational strength by using strategies which influence the motivational factors affecting behavior (Hackman-Oldham, 1980).

Prior to implementing strategies to sustain faculty involvement, policy makers require a basis for making decisions on which strategies to use. The instrument used in this study provided a means by which faculty could indicate the level of importance various strategies had in influencing their motivation for involvement in international activities. Such information can then be used to better make decisions regarding strategies to sustain faculty motivation for involvement in development activities.

METHODS

A population of 195 college of agriculture faculty members from five Midwest land grant institutions (Iowa State University, the University of Missouri, Kansas State University, the University of Nebraska, and Oklahoma State University) were surveyed. Each of these faculty had indicated involvement in international development work by permitting their names to be actively considered for short-term assignments on an AID-funded East African project. All members of this population were represented in the sample. The results from the study, therefore, cannot be statistically inferred to a larger population. The results, however, can be inferred to a larger population on a logical basis (Hinkle et al., 1979).

Items included in the instrument were directly linked to the literature on faculty involvement in international development activities and to the theoretical framework on motivation as advocated by the humanistic school of thought. A series of demographic questions was asked to ascertain certain aspects of this group's background. The second part of the instrument consisted of 25 personal characteristic traits desired by people involved in international development activities. Each of these characteristics was matched with a bi-polar adjective. Using a modified semantic differential 7-point scale, faculty were asked to identify how closely they identified with the desired characteristics.

Five-point Likert-type scales were developed to measure the level of importance of 23 possible sources of original motivation for involvement in international development activities. The same 5-point Lickert-type scale was also developed to measure the level of importance of 16 possible strategies to stimulate or sustain faculty's involvement in development activities.

The questionnaires and attached cover letters were mailed to each member of the population on September 11, 1984. One month later, a follow-up letter and additional questionnaire were sent to each faculty member who had not responded to the first mailing. A total of 166 faculty did respond to these two mailings for an 85.13 percent response rate. A random sample follow-up of non-respondents revealed no differences in how respondents and non-respondents answered instrument items. Reliability coefficients of .81, .79, and .86 in the three parts of the instrument were found to be acceptable for this study.

RESULTS

Demographic information

Several selected demographic variables indicated that it is primarily the older, more established faculty members who are involved in international development activities. These findings are supported by earlier research which expressed concern that few younger, untenured faculty were involved in international development activities. This trend is alarming to some development experts (Management Analysis Center, 1982) who predict an "empty pipeline" of development specialists for projects in the future.

That experience in a developing country is useful and relevant for U.S. home university duties is evident from an analysis of additional demographic findings. The most frequently cited contributions to the faculty's home-based assignments were in the areas of advising students, revising existing courses or developing new courses, furthering research projects, and in writing publications. Only 4.10 percent of the respondents indicated that they had not used their developing country experience in their university duties.

Personal characteristics profile

How did these faculty rate themselves on the list of 25 personal characteristic traits identified in the literature as being important for people involved in international development activities? As indicated in Table 1, respondents closely or very closely identified with 15 of the characteristics and had an average rating on eight of these characteristics. There was only one trait in which respondents rated themselves below average. These findings indicate that the respondents had developed those traits necessary, as identified in the literature, for involvement in international activities.

Results from a one-way analysis of variance test[1] indicated a highly significant difference (F prob.=.001) when the mean composite score on the personal characteristic traits was compared by level of experience in a developing country.[2] Results from the Scheffe´ post hoc test indicated that respondents with 7+ months of developing country experience placed a greater mean score (5.33) on this item than did respondents with no experience in a developing country (4.97).

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[1] Inferential statistics could be used, since not all of the sample responded to the instrument (Hinkle et al., 1979).

[2] The three levels of developing country experience were 0 months, 1-6 months, and 7+ months.

Table 1. Identification of respondents with characteristics desired by people involved in international development activities

Desired characteristic	N	Mean[a]	Standard deviation	Rank
Respectful	158	6.02	.89	1
Enthusiastic	157	5.89	.76	2
Diplomatic	158	5.72	0.91	3
Optimistic	158	5.60	1.04	4
Persistent	157	5.56	.98	5
Social	156	5.55	.95	6
Unbiased	157	5.55	.97	7
Idealistic	157	4.50	1.37	8
Tolerant	158	5.48	1.08	9
Flexible	157	5.45	1.04	10
Humanitarian	158	5.37	1.01	11
Practical	156	5.35	1.14	12
Persuasive	157	5.32	.95	13
Sense of humor	156	5.31	1.20	14
Objective	156	5.10	1.03	15
Altruistic	156	5.08	1.12	16
Team player	157	5.01	1.45	17
Creative	157	4.98	1.17	18
Patient	157	4.89	1.27	19
Empathetic	156	4.84	1.25	20
Curious	157	4.69	1.34	21
Cosmopolitan	157	4.66	1.43	22
Adventurous	157	4.43	1.39	23
Nonjudgmental	157	4.22	1.38	24
People-oriented	157	3.98	1.56	25

[a] Means established from a 1-7 scale.

Sources of original motivation

Why did these faculty initially become involved in development activities? Out of the 23 listed sources of original motivation, Table 2 indicates that those sources given the most importance had to do with the nature, the importance, and the personal value of development work in fulfilling the intrinsic needs of the respondents. These findings basically agreed with earlier research efforts (Perez and Rogers, 1984; Senger, 1979) which had also examined sources of original motivation. It is interesting to note that respondents placed a greater mean level of importance on the sources which had intrinsic origins (3.70) than they did on the sources with extrinsic origins (2.08) or on combination items (2.90).

Level of experience in a developing country was, again, a factor when a one-way analysis of variance test was run on sources of original motivation by the three levels of experience. Out of the nine significant or highly significant findings from the one-ways, it was determined by the Scheffe´ post hoc test that respondents with 7+ months of experience were involved in eight of those differences.

These findings point out that respondents with extensive experience in a developing country placed quite different levels of importance on sources of original motivation than did respondents with less experience. It appears that some type of previous exposure to overseas activities has played a significant role in their decision to become involved in development work. Also important to note is the greater level of importance these people placed on added income.

Strategies to stimulate and sustain motivation

The humanistic school of thought on motivation argues that strategies can be developed which stimulate and sustain motivation. Faculty response to the 16 strategy items listed in the instrument indicates (see Table 3), in general, a need for information on how to stay involved and a recognition for such involvement. Also rated very highly was an opportunity to do short-term consulting assignments in developing countries.

Recognition items included being identified as a member of the home university´s group of development specialists and being able to use the overseas experience in domestic work. Informational items included receiving details on university programs, being involved in the design of university projects, attending meetings, seminars, and interacting with faculty on campus with similar interests. These needs can be incorporated into strategies designed by university personnel to stimulate motivation for involvement in international agricultural development efforts.

Results from one-way analysis of variance tests indicated highly significant differences when strategies were run by level of experience in

Table 2. Frequencies, means, standard deviations, and rank by means of sources of original motivation for involvement in international agricultural development activities

Source	N	Mean[a]	Standard deviation	Rank
Appreciation of cultures and people.	156	4.26	.77	1
Important and interesting work.	155	4.13	.77	2
As an opportunity to expand my experience.	155	4.09	.90	3
A curiosity to see other parts of the world.	153	3.89	1.02	4
Provide a humanitarian service.	156	3.81	.96	5
An interest in developing countries.	157	3.78	.96	6
Application of U.S. experience to a developing country.	154	3.75	1.11	7
As a means to add to my professional competence.	151	3.62	1.64	8
Interaction with friends from developing countries.	142	3.29	1.07	9
Interaction with faculty peers.	147	3.16	1.09	10
Advising students from developing countries.	120	3.01	1.19	11
Living abroad.	67	2.94	1.54	12
Military service abroad.	65	2.89	1.29	13
Contact with development professionals.	139	2.84	1.13	14
Extensive travel abroad.	99	2.66	1.35	15
Prior employment abroad.	52	2.65	1.69	16
Participation on an overseas fellowship.	53	2.45	1.62	17
Studying abroad.	33	2.30	1.65	18
Courses I have taught.	93	2.25	1.23	19
Interaction with professors as a student.	132	2.13	1.19	20
Influence from supervisors.	141	2.15	1.24	21
As a means to add to my income.	129	2.00	1.19	22
Courses taken as a student.	125	1.74	.99	23

[a] Means established from a 1-5 scale.

Table 3. Frequencies, means, standard deviations, and rank order of strategies to stimulate and sustain motivation for involvement of faculty in international agricultural development activities

Strategy	N	Mean[a]	Standard deviation	Rank
Serve as short-term consultant.	141	4.11	.99	1
Identify myself as a member of my home university's group of development specialists.	139	3.17	1.31	2
Receiving details on projects the university is implementing.	147	3.14	1.08	3
Assisting in the program design of university projects.	127	3.09	1.13	4
Enable faculty to utilize overseas experience in domestic work.	140	3.08	1.25	5
Attend seminars, etc.	153	3.08	1.10	6
Involvement in university strategy.	130	3.07	1.20	7
Meet regularly with campus colleagues who have developing country interests.	152	3.03	1.08	8
Contact with former students from developing countries.	131	3.02	1.20	9
Serve on M.S./Ph.D. committees with international topics.	123	2.84	1.16	10
Pre-assignment orientation.	117	2.73	1.22	11
Membership in international organizations.	134	2.58	1.26	12
Receiving leadership from an international agriculture office.	131	2.57	1.24	13
Salary increase based on developing country experience.	115	2.54	1.36	14
De-briefing by a dean.	121	2.28	1.17	15
Promotion based on experience in developing countries.	107	1.97	1.25	16

[a] Means established from a 1-5 scale.

a developing country. Results from the Scheffe´ post hoc tests indicated that these differences involved respondents with 7+ months of experience. Respondents with extensive experience placed greater mean levels of significance on "Identifying myself professionally as a member of my home university´s group of development specialists" (F prob.=.000) and on "Keeping in contact with former students who have returned to their developing countries" (F prob.=.022).

CONCLUSIONS

Motivational factors affecting faculty involvement in international development activities represent a complex set of factors. The current study demonstrates 1) some concern about younger faculty participation in development, 2) the relevance and value of developing country experience, 3) a close identification of faculty, particularly those with developing country experience, with characteristics desired for people involved in development activities, 4) general agreement that sources of regional motivation had to do with the importance, the nature, and the personal value of the work in fulfilling the intrinsic needs of the respondents, and 5) the need for strategies to include recognizing faculty for their involvement and in keeping faculty informed and involved in home university development activities.

Findings from this study also indicate that faculty with extensive developing country experience do respond differently to personal characteristic traits, to sources of original motivation, and to strategies which stimulate motivation. Policy makers from donor agencies and from universities who are interested in faculty involvement in international development activities should take into consideration these differences when working with faculty.

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CRITIQUES

Research Report C-1: A National Study of Recommended Curricula for Extension Education Methods Classes and Student Internship Programs
By: Jim Legacy and Joe Wells

Research Report C-3: An Assessment of Motivational Factors Affecting College of Agriculture Faculty Involvement in International Activities
By: Stephen P. Jones and Harold Crawford

Concurrent Session C, 8:30 - 10:00 a.m.
December 6, 1985

National Agricultural Education Research Meeting
American Vocational Association
Atlanta, Georgia

Discussant

James E. Diamond
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A Critique of Research Report C-1
Presented by Jim Legacy and Joe Wells titled:

A National Study of Recommended Curricula for Extension Education Classes and Student Internship Programs

I commend researchers Jim Legacy and Joe Wells for addressing a topic that tends to be in a constant flux. As we enter into the age of information and high technology, there will be continual changes in our society that affect the quality of life of Extension clientele. Constant population growth, vast availability of information, new high technology developments, changing lifestyles, different economic growth strategies, to name a few of the tangible modifications that are projected to take place by the turn of the century. These changes conceiveably will place new demands on the Cooperative Extension Service at the local, state, and national levels. To encounter these modern opportunities, major changes are presently being implemented within the various ranks of the Cooperative Extension Service throughout the United States.

At institutions of higher learning that offer Cooperative Extension preservice programs, it is imperative that the content of their respective undergraduate courses reflect the "state of the art." Continual updating of the course content will enhance preservice programs in the preparation of undergraduate students to gain job entry as Cooperative Extension agents. They will apt to be more competent in delivering both the non-formal and formal education programs necessary to address clientele needs at the local level. I personally have a sincere interest in the results of this study because I, too, teach students in a course titled "Methodology of Extension Education." The implications of this study offers evidence that can contribute to updating our course content.

The title of this paper adequately reflects the purpose of the research efforts presented. The key questions posed by Wood and Davis certainly provided a sound basis for the purpose of the investigation. The introduction seemed to be somewhat fragmented in developing the problem. However, I am confident that the introduction and literature review in its entirety more clearly establishes the rationale for the problem stated. The objectives were clearly presented and were relevant to the overall purpose. Requesting professors from 70 colleges of agriculture in the United States to provide the researchers names of experienced and highly competent extension agents was a respectable effort. However, I'm not sure what criteria was used to establish the interpretation of "experienced" and "highly competent" extension agents. Defining these two terms early on would have strengthened the description of the sample. I commend the researchers for identifying subjects from the three Extension program areas. But another question about the 135 usable names for the sample is, were these subjects a representative sample of Extension agents from the three Extension areas in the 43 states?

Now to focus on the instrument developed by Memmesheimer. It was adequate in rating nationally the importance of each of the 19 items listed. However, the purpose of the study (B, page 2) " . . . was to determine: What extension education methods and other course content items did experienced extension agents consider important as instructional topics for an undergraduate extension education methods class and student internship programs." It seemed to me the results reflected only a rating of importance of the items reported by Memmesheimer. I have no problem with this strategy, but I pose the question, were their other important topics as perceived by the subjects that were not included on the instrument? Were the subjects afforded the opportunity to indicate other important topics?

Pilot testing the instrument with Extension agents who had five or more years of experience was appropriate. I need to ask, were the years of experience of the pilot test subjects similiar to the subjects used in the sample? It would have been helpful if a reliability coefficients resulting from the pilot test were reported.

The data collection procedure appeared to be appropriate for this type of investigation. The response rate of the agents (85.5%) was excellent for obtaining data in a nationwide study. I commend your achievement. Was there any follow-up on the non-respondents?

In the procedures section, #5, it was reported that "The descriptive statistics used to analyze the studies data included frequency response, means, rank orders, percentages and Spearman's rank order correlation." In #2 of the procedures, it was indicated that each of the 19 items on the instrument was rated for course and internship importance using a four-point rating scale. I can support this approach to this point. However, in reporting the percentages of two of the four ratings and ranking the responses based only on those rated "high importance" caused me to ask why this approach was used. It seems to me that table one should have displayed the "n" for each item, a mean score of the rating for each of the items, a standard deviation, and rank according to the rated mean scores. In my opinion, if this arrangement of table one would have included these items, the results, conclusions and recommendations conceiveably could have been more logically reported.

The Spearman Rank Order Correlation was appropriate since it was used to compare two sets of ranks to determine their degree of equivalence. Again, if the mean rating scores were used to calculate the Spearman rank-order correlations, the results could have been different.

I commend the researchers for displaying the ranking of general topics and Extension methods by type of agent on tables four and five. I would suggest only that it would've been helpful if the "n" for each of the types of extension agents be reported.

The conclusions were clearly stated and were substantiated by the evidence presented. I found recommendations #1 to be relevant and useful. However, recommendation #2 is unclear regarding "... should teach similar topics, but with emphasis on different topics. I'm not sure that this means. Part of recommendation #3 is questionable in terms of practicality. "...extension education method classes and internships should be offered separately by type of agent...." In your opinion, would it be practical at your institution to offer three sections of the same course with each section having a focus on one of the three types of Extension Agents? It seems to me that the second part of recommendation #3 "...should allow for a variance of instructional topic importance offered in a single program" is more relevant and practical.

It is these kinds of research efforts that can enhance the Extension preservice programs for undergraduate students preparing for careers with the Cooperative Extension Service. Perhaps the 4-H motto best decribes why more of this type of research is needed, "to make the best better."

A Critique of Research Report C-3
Presented by Stephen P. Jones and Harold Crawford titled:

An Assessment of Motivational Factors Affecting College of Agriculture Faculty Invovement in International Development Activities

I commend researchers, Stephen P. Jones and Harold R. Crawford for presenting this excellent research paper titled, "An Assessment of Motivational Factors Affecting College of Agriculture Faculty Involvement In International Development Activities." They have addressed an issue that has restrained many creative and capable agricultural faculty members from entering into what the researchers so appropriately call "an empty pipeline." The concerns of international government agencies and the private sector regarding the decreasing tendencies of agricultural faculties from institutions of higher learning in becoming involved with international development activities are very real according to officials from both the World Bank and United States Agency for International Development. Officials from the Food and Agriculture Organization International Headquarters, Rome, have projected that future peacetime activities in developing nations will generate a multitude of both long and short term opportunities for faculty members who are affiliated with a College of Agriculture, particularly those in Land-Grant institutions. The implications of this study, in my opinion, were important enough that I telephoned Dr. David Hansen, Science and Technology Bureau, US/AID, and Dr. Dale Harpstead, USAID/BIFAD, Washington, DC and invited them to attend this research meeting to hear Drs. Jones and Crawford present this paper. I strongly recommend that Drs. Jones and Crawford provide the Science and Technology Bureau and BIFAD at USAID with a complete copy of this study. I have their addresses for your portfolio. They expressed a great deal of interest in these findings.

I found the title of this paper to adequately describe its content. As one reads the introduction, it quickly and clearly establishes a sound rationale for the topic. It flows smoothly into and supports the problem being investigated.

I liked the format that was used in stating the purpose of this study. Asking first the question that evolved from a well documented introduction; then briefly speculating as to how to get at the problem; followed by a statement describing the overall purpose of the investigation and what implications the results may possess; and finally followed by specific objectives that focused on the overall purpose. The theoretical framework was terse and constituted a logical synthesis of relevant literature that adequately described the concepts supporting the specific objectives of the investigation.

The results were adequately and clearly presented. They addressed the specific objectives of the study and provided relevant information. The descriptive statistics used to analyze the raw data were appropriate. The reported results and the discussion of these results focused on the overall purpose of the investigation. The conclusions were substantiated by the results reported from this investigation.

Suggestions

When not being closely involved with a research project, it is difficult for a discussant to offer suggestions to the researchers based simply upon reading an abridged paper limited to twelve pages. I am confident that the complete text may resolve some of the queries that I posed. Thus, I would like to mention some points that, if clarified, could enhance this timely piece of research.

1. Specific objective three, page 2, I'm not totally convinced that the results of this study will "develop" strategies that can be used to stimulate and sustain faculty involvement in international assignments. It appeared to me that the results of this study "identified" strategies that most commonly stimulated and sustained those faculty who responded to the mailed instrument.

2. Methods, first paragraph, page five, second sentence. "Each of the faculty had indicated involvement in international development work by permitting their names to be actively considered for short term assignments on an AID-funded East African Project." I pose the question, how is the key word, "involvement" defined? The word "involvement" lead me to believe that all the subjects had been involved in international development work abroad. But, when I got to the bottom of page six, I suddenly discovered there was possibly a group of subjects in the population that had no international development experience. I'm not totally convinced that this was a good indicator of involvement of international development work as I perceive it. Hence, I believe this point needs to be clarified.

3. Can I assume that the instrument was pilot tested? There was no mention of pilot testing the instrument.

4. The presentation of "personal characteristics profile" results on page six, first paragraph, second sentence. I'm not sure I know what "closely or very closely" means. These two terms are somewhat ambiguous.

Second paragraph, first sentence. Here is where I learned that there were subjects who possibly had no international experience. To this point, the previous text lead me to believe that all the subjects in the populations had international experience (page 5, Methods, second sentence).

I realize that the use of a one-way analysis of variance (ANOVA) in studies of this nature is acceptable by some circles of social researchers. However, I need to raise the flags of caution of using ANOVA when a total population is surveyed. Normally, when a total population is surveyed, descriptive statistics are appropriate. In the last paragraph on page 5, it was reported that "a random sample follow-up of non-respondents revealed no differences in how respondents and non-respondents answered instrument items." Since there were no differences, then one could safely describe the population responses and ANOVA would be unnecessary.

5. Sources of original motivation, p. 8, last sentence. It would have been helpful on table 2 if the "sources" would have been designated as "intrinsic" or "extrinsic." As developed in the theoretical framework, it is difficult to know which sources the researchers consider intrinsic or extrinsic.

In paragraph two, last sentence, page 8, it was reported "....that respondents with 7+ months of experience were involved in eight of those differences." I'm not sure I know what the differences were as indicated by Scheffe post hoc test. Since a one-way ANOVA was run using three levels of experience as the independent variables, presenting such data on a table would have assisted the interpretations.

Again, I commend these researchers for addressing an issue that concerns universities, faculties, international development agencies, and third world clientele.

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FACTORS ASSOCIATED WITH DEVELOPING AN UNDERSTANDING OF SOEP AS PERCEIVED BY OREGON VOCATIONAL AGRICULTURE TEACHERS

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FACTORS ASSOCIATED WITH DEVELOPING AN UNDERSTANDING OF SOEP AS PERCEIVED BY OREGON VOCATIONAL AGRICULTURE TEACHER

In recent years much concern has been expressed by agricultural educators over the reduced emphasis on the supervised occupational experience programs (SOEP) in high school vocational agriculture programs. A California study revealed that teacher support of the vocational agriculture program was significantly related to student participation in SOEP (Leising, 1983). Harris and Newcomb (1983), found that in Texas, quality of SOEP was directly related to the teacher's view of the importance of occupational experience and to their attitude toward supervision of SOEP. A national study revealed that vocational agriculture teachers who have a more positive attitude toward SOEP have a higher proportion of students who conduct SOEP's (Reneau, Roider, Legacy, and Stitt, 1984). Herren and Cole (1984) concluded that in Oregon there were philosophical differences concerning SOEP between teachers whose programs strongly emphasize SOEP and teachers whose programs do not. Assuming that the philosophy of SOEP is based on an understanding of the concept of SOEP, it was concluded that a study was needed to determine where teachers develop their understanding of SOEP.

PURPOSE AND OBJECTIVES

The main purpose of the study was to determine the sources of Oregon vocational agriculture teachers' understanding of the concepts of SOEP. It was felt that once the factors most influential in developing an understanding of SOEP could be determined, instructional emphasis could then be placed on those areas resulting in more effective training in SOEP. Specific objectives were to determine:

1. the perception of vocational agriculture teachers as to the importance of various factors in developing their understanding of SOEP;
2. what differences exist in the perceptions of the importance of various factors in developing an understanding of SOEP between vocational agriculture teachers trained in Oregon and those trained in other states;
3. what differences exist in the perceptions of the importance of various factors in developing an understanding of SOEP between vocational agriculture teachers who conduct strong programs in SOE and those who conduct weak programs in SOE.

METHODOLOGY

The population consisted of the 125 vocational agriculture teachers in Oregon. A randomized sample of 95 teachers was selected to insure a sufficient observation in each of two groups that were selected based on the strength of the teacher's SOE program. Teachers were divided into the two groups based on data obtained from the instrument. Criteria for those in the "strong" program group were that (1) 70% or more of the students in the program conducted SOE programs; (2) students were required to have an SOEP agreement; and (3) two or more visits were made to each student with an active SOEP per year. Criterion for the "weak" group was that 30% or less of the students in the program conducted an SOEP. The data were analyzed using the entire sample and also by stratifying the sample into two groups representing the "strong" programs and the "weak" programs.

An instrument was developed and tested for validity using a seven member panel of experts consisting of teacher educators, graduate students, and state department of education staff. The instrument was then field tested using current vocational agriculture teachers who were not a part of the study. An initial mailing and two follow-ups produced a 91% return. Since there was only a 9% non response, bias from non respondents was not considered critical (Borg and Gall, 1979). The data were analysed using t-tests, frequency counts, and means.

FINDINGS

Objective one

A nineteen item segment of the instrument used a five point graduated scale to elicit the perception of the teachers regarding the importance of various factors in developing their understanding of the SOEP component of the vocational agriculture program. The scale used the following ranking: 1 = did not contribute; 2 = fairly important; 3 = important; 4 = very important; 5 = extremely important. The factors perceived by the teachers in the sample as being the most important contributors to their understanding of SOEP were: (1) FFA awards program (proficiency awards, contests, etc.); (2) the vocational agriculture teachers' own high school SOEP program; (3) observing other vocational agriculture teachers: (4) direct instruction or advice from other vo-ag teachers; and (5) following the example set at their student teaching center. The factors considered least important were (15) State Department of Education supervision; (16) The Agricultural Education Magazine and other professional publications; (17) school administrators' advice and supervision; (18) local FFA Alumni advice and assistance; and (19) regional vocational coordinators' advice and supervision. (see table 1)

Objective Two

In order to determine if there were differences in the perceptions of vocational agriculture teachers trained in Oregon and those trained in other states, a t-test was administered to compare responses to all of the 19 items of the instrument. There were no significant differences found between the importance ratings of the 53 teachers trained at Oregon State University and the ratings of 33 teachers trained at 16 other universities across the nation.

Objective Three

To determine if differences existed in the perceptions of the importance of various factors in developing an understanding of SOEP between vocational agriculture teachers who conduct "strong" SOE programs and those teachers who conduct "weak" SOE programs, a t-test was administered comparing importance ratings on all of the 19 items. Thirty of the teachers in the sample fell into the "strong" SOEP program group and 27 teachers fell into the "weak" SOE program group. The remainder of the sample were not used as they represented an intermediate area between the "strong" programs and the "weak" programs. An analysis of the data revealed no significant differences between the two groups on any of the 19 items on the instrument.

CONCLUSIONS

1. The most important factors in developing an understanding of the importance of SOEP appear to be those of an informal nature such as: FFA awards programs, the teachers own high school SOEP, and peer relationships with other vocational agriculture teachers. Formal course work on the undergraduate and graduate level was not perceived as being very important.

2. Vocational agriculture teachers trained at Oregon State University and vocational agriculture teachers trained at other institutions essentialy have no disagreement as to which factors were most important in developing an understanding of SOEP.

3. Vocational agriculture teachers who conduct strong SOE programs agree with those vocational agriculture teachers who conduct weak programs as to the factors most important in developing an understanding of the importance of SOE programs.

RECOMMENDATIONS

1. Both the undergraduate and graduate courses at Oregon State University should be re-examined as to content concerning philosophies about the SOEP component of the vocational agriculture program. Since other vocational agriculture teachers seem to have such an important impact on the developing of an understanding of SOEP, those teachers who conduct strong SOE programs should be used to provide classroom instruction on SOEP.

2. Since both conferences and peer teacher advice were rated as important, use should be made of vocational agriculture teachers who conduct "strong" SOE programs at summer conference in both formal and informal training sessions.

3. Since the second most important factor was found to be the teachers' own high school SOEP, emphasis should be placed on recruiting students into teacher preparation programs who were enrolled in high school vocational agriculture programs that strongly emphasized SOEP.

4. FFA award programs should continue to be closely related to SOE programs and thus continue to strengthen teachers' understanding of SOEP.

5. Since one of the top five factors involved in the development of the understanding of the concept of SOEP was the student teaching center, care should be taken to ensure that student teachers are placed in centers that conduct "strong" SOE programs.

TABLE I

Rank Order Listing of Means & Standard Deviations of Factors Associated with the Development of Understanding of SOEP

Rank	Item	Mean*	N	Standard Deviation
1	FFA Awards Program	3.72	85	1.08
2	The Teachers' Own High School SOEP Experiences	3.64	67	1.44
3	Observing Other Vo-Ag Teachers	3.58	85	1.13
4	Direct Advice and/or Instruction From Other Vo-Ag Teachers	3.52	86	1.03
5	Following Example Set at Student Teaching Center	3.49	79	1.24
6	Conferences and Conventions Attended	3.42	82	1.12
7	Undergraduate Classrooms Instruction	3.01	31	1.25
8	Local Job Descriptions/Input From Local Employers	2.86	81	1.33
9	Following Example Set at Junior Block Center	2.82	49	1.50
10	FFA Promotional Literature and Program Material	2.81	83	1.11
11	Local Advisory Council Advice and Assistance	2.69	78	1.24
12	First and Second Year Teacher Visits	2.63	67	1.22
13	First Year Teacher Seminars	2.63	64	1.22
14	Graduate Courses	2.53	74	1.09
15	State Department of Education Supervision	2.37	62	1.24
16	Ag Ed Magazine and Other Professional Publications	2.26	76	1.11
17	School Administrators Advice and Supervision	2.06	71	1.31
18	Local FFA Alumni Advice and Assistance	1.71	44	1.24
19	Regional Vocational Coordinator's Advice and Supervision	1.62	61	1.05

*1 = Did Not Contribute
2 = Fairly Important
3 = Important
4 = Very Important
5 = Extremely Important

Factors Limiting Vo Ag Student Participation in SOE Programs in Nebraska

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FACTORS LIMITING VO AG STUDENT PARTICIPATION IN SOE IN NEBRASKA

Supervised Occupational Experiene (SOE) Programs have been a part of vocational agriculture and agribusiness since its inception. The Smith-Hughes Act of 1917 provided federal funding for vocational agriculture and required "...directed or supervised practice in agriculture, either on a farm provided by the school or other farm, for at least six months per year" (Stimson,1919). Vocational agriculture and the industry of agriculture has, of course, changed dramatically since that time. However, the role of SOE in the comprehensive vocational agriculture program remains fundamentally the same (Barrick, 1981).

Lee (1980) expressed concern that SOE in our vocational agriculture program was "...slipping away, and without it we would lose one of the pillars on which vocational education in agriculture/agribusiness has been built." If student participation in SOE is indeed slipping, steps must be taken to determine the factors affecting participation and implement programs to address those problems.

PURPOSES AND OBJECTIVES

The primary purpose of this study was to identify factors limiting student participation in SOE programs in Nebraska, as perceived by Nebraska vocational agriculture instructors. Specific objectives reported within this paper include:

1. Identify SOE-related characteristics of Nebraska vocational agriculture instructors.
2. Determine the importance of selected school district, vocational agriculture, economic, student, and social factors in limiting student participation in SOE.
3. Determine differences between mean importance ratings of factors limiting student participation in SOE in the areas of school district policy, vocational agriculture program factors, economic factors, student factors and social factors.
4. Compare importance ratings of selected factors limiting student participation in SOE by the selected teacher characteristics of length of contract, number of SOE on-site instructional visits per year, hours employed in addition to vocational agriculture duties, and respondent rating of their overall SOE program.

DATA SOURCES

The popuation in this study consisted of instructors in the 136 secondary vocational agriculture programs in Nebraska. A 50% random sample (68 instructors) was selected to participate and provide data for this study. Of 68 possible respondents, 62 completed the survey instrument for a response rate of 91 percent.

METHOD

A mailed survey instrument was used to collect data utilized in this study. The instrument was developed by members of the University of Nebraska Department of Agricultural Education. It was reviewed for clarity, understanding and completeness by a jury of vocational agriculture instructors not considered a part of the sample. The revised instrument was mailed to an additional twelve non-sample vocational agriculture instructors to determine reliability. A Cronbach Alpha Reliability Coefficient was computed for each of the five dependent variable sections. All sections had a reliability coefficient of .8254 or greater, better than the minimum alpha level of .80 discussed by Carmines and Zeller (1979). After minor adjustments, the instrument was determined ready for use.

A one to nine scale was used to evaluate the "importance" of the item as a factor limiting vocational agriculture student participation in SOE. A "1" indicated the item was of no importance in limiting participation; a "5" indicated the item was of average importance in limiting participation; and a "9" indicated the item was of high importance in limiting student participation in SOE.

Part II of the survey collected data associated with vocational agriculture instructors, vocational agriculture programs, SOE policies, and SOE practices in Nebraska. A follow-up of nonrespondents was conducted to determine if differences existed between initial and nonrespondents. Since no differences were found, all responses were pooled to arrive at a final response rate of 62 of 68, or 91 percent.

Analysis of data included calculation of frequencies, means, and standard deviations on all items. Analysis of Variance (ANOVA) for a two-factor experiment with repeated measures on one factor was performed to determine differences in mean importance ratings of limiting factors, as well as to determine possible interaction of importance ratings with selected demographic data. A TUKEY post hoc test was used to determine where actual differences existed.

RESULTS

SOE-related demographic information of interest in this study included:

A. Respondents had an average of 9.9 years of experience
B. 45% had an M.S. or Ph.D. degree
C. 97% had an eleven month contract or more
D. 68% had completed at least some Vo Ag/FFA in high school (52% all four years)
E. 20% were employed twenty hours or more in addition to their vo ag assignment
F. 40% had written SOE policies for their department
G. 90% required SOE of all their students
H. 90% of all students participated in SOE
I. 52% conducted on-site instructional visits with their students two or more times per year

Factors limiting student participation in SOE were considered in five specific areas perceived to have an impact on vocational agriculture. Table 1 illustrated the importance of selected school district policy factors in limiting student participation in SOE.

Table 1: Rankings, mean ratings and standard deviations of importance of selected school district factors in limiting vo ag student participation in SOEP.

Rank	Factors	M	SD
1	No teacher time assigned for SOE supervision	5.24	2.9
2	Principal does not understand the importance of SOE	4.11	2.9
3	School administration does not support SOE	3.92	3.1
4	Superintendent does not understand importance of SOE	3.84	2.9
5	School administration does not support vocational agriculture	3.68	3.1
6	Transportation for SOE on-site instruction not provided by district	3.32	2.7
7	Limited mileage budget available for SOE on-site instruction	3.32	2.5
8	Local Education Association discourages after-school activity	2.23	2.3
	Composite Mean	3.74	

It was observed that only the school district policy of " No teacher time assigned for SOE supervision" was perceived to have above average importance as a factor limiting student participation in SOE (5.2 on a nine point scale).

Seven other school district factors were rated as being of less than average importance as factors limiting student participation in SOE. It was observed that "Local Education Association discourages after-school activity" was not a factor in preventing SOE participation.

Information in Table 2 provided evidence that facilities in vocational agriculture programs could be factors in preventing student participation in SOE. Nebraska teachers rated "No facilities available for nontraditional SOE Programs" and "No school land-laboratories available" as being above average in importance for limiting student participation in SOE (ratings of 5.85 and 5.58 respectively). Ten other vocational agriculture program factors were rated as being less than average importance as factors limiting SOE participation. It was further observed that the experience of the instructor was not considered an important factor in limiting SOE participation.

Table 2: Rankings, mean ratings and standard deviations of importance of selected vocational agriculture program factors in affecting vo ag student participation in SOEP.

Rank	Factors	M	SD
1	No facilities available for nontraditional SOE programs	5.85	2.7
2	No school land-laboratory available	5.58	2.7
3	Time to teach students about SOE is limited	4.44	2.5
4	Instructor has other responsibilities in the evening, i.e., bus route, coaching, etc.	4.26	2.7
5	Too many students to supervise individual SOE Programs	3.45	2.5
6	Instructor dislikes teaching SOE and record keeping	3.39	2.7
7	The FFA program over-shadows the importance of SOE	3.35	2.4
8	SOE instructional materials not available to teach SOE as part of the curriculum	3.34	2.5
9	Limited number of extended contract days	3.31	2.6
10	Too much emphasis is placed on FFA contests in the curriculum	3.29	2.5
11	Instructor lacks knowledge of SOE and record keeping	3.18	2.6
12	Vocational agriculture instructor has limited teaching experience	2.48	2.1
	Composite Mean	3.86	

Table 3 illustrated that several economic factors could be important factors for limiting student participation in SOE. It was observed that seven of the 10 economic factors listed were rated as above average in importance as being factors preventing SOE participation. Economic factors was the only area with a composite mean above 5 (average importance).

Economic factors considered most important in limiting SOE participation were: "Current loan interest rates are too high;" "Limited money to finance SOE available;" "Parents ability to help with financing is limited;" "Financing available from lending institutions is limited;" "Number of Agribusinesses available for placement is limited;" "Agribusinesses are hiring fewer student learners;" "Minimum wage is too high for employing student learners."

Table 3: Rankings, mean ratings and standard deviations of importance of selected ecomonic factors in affecting vo ag student participation in SOEP.

Rank	Factors	M	SD
1	Current loan interest rates are too high	6.30	2.2
2	Money available for students to finance SOE is limited	6.26	2.1
3	Agribusinesses are hiring fewer student-learners	6.25	2.3
4	Parents ability to help with financing is limited	6.08	2.2
5	Number of agribusinesses needed for placement in the community is limited	5.90	2.5
6	Financing available through lending institutions is limited	5.28	2.3
7	Minimum wage is too high for employing students	5.26	2.4
8	Size of family limits parent support for SOE	4.87	2.2
9	Student's parent(s) are unemployed	4.38	2.6
10	Student comes from a single-parent home	3.75	2.3
	Composite Mean	5.43	

Only two student factors were rated as above average in importance as factors limiting participiption in SOE (Table 4). "Students lack the desire for SOE" (5.10) and "Students dislike maintaining SOE records" (6.80) were identified by Nebraska vo ag teachers as limiting factors. Eleven other student factors were rated as being below average in importance.

Table 4: Rankings, mean ratings and standard deviations of importance of selected student factors in affecting vo ag student participation in SOEP.

Rank	Factors	M	SD
1	Students dislike maintaining SOE program records	6.80	2.0
2	Students lack the desire for a SOE program	5.10	2.2
3	Students fail to see relationship of SOE to career preparation	4.98	2.4
4	Students have a negative attitude about SOE	4.52	2.3
5	Students are not serious about a career in agriculture	4.51	2.2
6	Students live in urban areas	4.44	2.7
7	Students fail to see relationship of SOE to FFA achievement	4.43	2.4
8	Farmers and ranchers will not hire student-learners	4.03	2.4
9	Students live on small acreages	3.97	2.2
10	Students are already employed in nonagricultural businesses	3.79	2.1
11	Students are more involved with 4-H in the community	3.49	2.5
12	Students lack transportation to and from SOE program	3.39	2.0
13	Students have a negative attitude about vocational agriculture	3.38	2.4
	Composite Mean	4.37	

Table 5 provided information about social factors that could limit student participation in SOE. Two factors were identified as being of greater than average importance in limiting student participation. They were: "Student participation in sports is excessive" (6.39) and "Student participation in school activities other than sports is excessive" (5.69). Three factors were rated below 3.0, indicating they were not a meaningful factor in limiting participation in SOE.

Table 5: Rankings, mean ratings and standard deviations of importance of selected social factors in affecting vo ag student participation in SOEP.

Rank	Factors	M	SD
1	Student participation in sports is excessive	6.39	2.5
2	Student participation in school activities other than sports is excessive	5.69	2.5
3	Parents do not encourage SOE participation	4.89	2.6
4	Lack of "work ethic" in the community; not taught to students	3.97	2.5
5	Student participation in community or church activities is excessive	3.62	2.2
6	Peer pressure works against SOE involvement	3.39	2.4
7	Low socio-economic level in the community	3.33	2.0
8	Other teachers show no respect for vocational agriculture	3.20	2.3
9	Students are from affluent families; don't need the employment	2.85	2.2
10	Community attitudes about SOE are negative	2.74	2.0
11	Community attitudes about vocational agriculture are negative	2.66	2.2
	Composite Mean	3.88	

The fourteen highest rated factors identified as limiting participation in SOE are listed in rank order in Table 6. Most were ecomonic factors.

Table 6: Mean ratings and standard deviations of importance of fourteen leading factors identified as limiting vo ag student participation in SOEP.

Rank	Factors	M	SD
1	Students dislike maintaining SOE program records	6.80	2.0
2	Student participation in sports is excessive	6.39	2.5
3	Current loan interest rates are too high	6.30	2.2
4	Money available for students to finance SOE is limited	6.26	2.1
5	Agribusinesses are hiring fewer student-learners	6.25	2.3
6	Parents ability to help with financing is limited	6.08	2.2
7	Number of agribusinesses needed for placement in the community is limited	5.90	2.5
8	No facilities available for non-traditional SOE programs	5.85	2.7
9	Student participation in school activities other than sports is excessive	5.69	2.5
10	No school land-laboratory available	5.58	2.7
11	Financing available through lending institutions is limited	5.28	2.3
12	Minimum wage is too high for employing student-learners	5.26	2.4
13	No teacher time assigned for SOE supervision	5.24	2.9
14	Students lack the desire for a SOE program	5.10	2.2

Factors having the least effect on limiting SOE participartion were identified as having importance ratings of less than 3.0. They were: Local Education Association discourages afterschool activity (2.23), vo ag teacher has limited experience (2.48), students from affluent families; don't need employment (2.85), community attitudes about SOE are negative (2.74), community attitudes about vo ag are negative (2.66). The twenty factors having the least impact on limiting SOE participation are listed in Table 7.

Table 7: Mean ratings and standard deviations of twenty factors identified as least likely to limit vo ag student participation in SOEP.

Rank	Factors	M	SD
1	Local Education Association discourages after-school activity	2.23	2.3
2	Vocational agriculture instructor has limited teaching experience	2.48	2.1
3	Community attitudes about vocational agriculture are negative	2.66	2.2
4	Community attitudes about SOE are negative	2.74	2.0
5	Students are from affluent families; don't need the employment	2.85	2.2
6	Instructor lacks knowledge of SOE and record keeping	3.18	2.6
7	Other teachers show no respect for vocational agriculture	3.20	2.3
8	Too much emphasis is placed on FFA contests in the curriculum	3.29	2.5
9	Transportation for SOE on-site instruction not provided by district	3.32	2.7
10	Limited number of extended contract days	3.31	2.6
11	Limited mileage budget available for SOE on-site instruction supervision	3.32	2.5
12	Low socio-economic level in the community	3.33	2.0
13	SOE instructional materials not available to teach SOE as part of the curriculum	3.34	2.5
14	The FFA program over-shadows the importance of SOE	3.35	2.4
15	Students have a negative attitude about vocational agriculture	3.38	2.4
16	Instructor dislikes teaching SOE and record keeping	3.39	2.7
17	Students lack transportation to and from SOE program	3.39	2.0
18	Peer pressure works against SOE involvement	3.39	2.4
19	Too many students to supervise individual SOE programs	3.45	2.5
20	Students are more involved with 4-H in the community	3.49	2.5

Mean ratings of factors within the five areas were compared by selected demographic data using the ANOVA procedure. It was observed that no differences in mean ratings existed within any of the five areas when compared by years of teaching experience, length of teaching contract, number of hours worked in addition to vo ag duties and number of student SOE visits per year.

Differences in composite ratings were observed when comparing school district policy influences by overall rating of the SOE program. It was observed that teachers who rated their overall SOE program as being "average" also tended to rate school district policy factors as being less important (3.0) as factors limiting SOE participation than those teachers who rated their SOE Programs as being "strong" (4.9). No other differences were observed in mean ratings by any other demographic variables.

CONCLUSIONS

Based on the findings of this study, the following conclusions were drawn.

1. Of the areas of influence included in this study, only economic factors were consistently rated as important considerations in limiting student participation in SOE in Nebraska high schools. Seven of the 10 economic factors were rated above average importance (5 or above on a 9-point scale).

2. Lower mean ratings of school district factors indicated administrative support was not an important factor limiting student participation in SOE. Administrative support was considered at least adequate by Nebraska teachers.

3. Nebraska teachers indicated that selected vocational agriculture program factors did not generally contribute to a lack of participation in SOE. Specifically, instructor knowledge of SOE and record keeping, excessive emphasis on FFA, limited extended contract days, and lack of instructional materials did not limit student participation in SOE.

4. Community attitudes about vocational agriculture and SOE were not important factors in limiting SOE.

5. No difference in importance ratings were observed when compared by years of teaching experience, length of teaching contract, hours employed in duties outside vocational agriculture, and number of on-site instructional visits per student per year.

RECOMMENDATIONS

Based on the conclusions from this study, the following recommendations are made to enhance student participation in SOE in Nebraska.

1. Immediate steps should be taken to address economic constraints affecting student participation in SOE by working with lending institutions, community business people, local FFA alumni, parents, and FFA chapters to increase the availability and opportunities for financial assistance.

2. Teachers of vocational agriculture should investigate ways of incorporating the use of school facilities and land laboratories to enhance SOE opportunities for non-traditional students.

3. Teachers of vocational agriculture should work cooperatively with administrators and fellow teachers to develop a student participation plan which would allow time for each student to participate in SOE or other school sponsored activities.

4. Teachers of vocational agriculture should investigate ways of involving students in directed laboratory experience programs which require less financial assistance, yet still allow experiential learning in an area of occupational interest to take place.

5. Teachers of vocational agriculture should investigate way of implementing placement SOE programs requiring low initial financial investment, yet provide the opportunity for earning wages and gaining experiences.

6. Additional research identifying factors affecting limiting of SOE participation should be conducted in areas other than those identified in this study.

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THE RELATIONSHIP BETWEEN CHARACTERISTICS OF COLORADO'S AMERICAN FARMER DEGREE RECIPIENTS FROM 1968 TO 1977 AND THEIR CURRENT OCCUPATIONAL STATUS

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INTRODUCTION

Vocational agriculture is an integral part of the education system in over 9,000 high schools in America. With the incorporation of vocational agriculture in the curriculum, these high schools are better able to meet the students' individual needs by providing increased education opportunities (Barrick, 1982, p. 3).

Vocational education in agriculture has changed significantly in the last two decades. Vocational agriculture, which was once predominantly production agriculture, has expanded into many different occupational areas to meet the growing needs of its clientele and the agricultural industry. To meet the occupational needs of students and to prepare them for entry into and advancement in specific occupations in agriculture, the total agricultural educational program has been divided into the following major occupational areas: agricultural production, farm management, ornamental horticulture, forestry, agricultural products, agricultural mechanics, agricultural resources, and agricultural supply and service.

The vocational agriculture program in the United States is made up of three integral components: classroom and laboratory instruction, supervised occupational experience program (SOEP), and Future Farmers of America (FFA) activities. The FFA is a national organization of, by, and for students of vocational agriculture. Since its beginning in 1928, the FFA has been committed to the development of leadership, citizenship, and cooperation. Through participation in FFA activities, students develop the leadership and personal competencies necessary for occupational success.

In 1971, Welton noted that with the expansion of vocational agriculture course offerings, the Future Farmers of America had become cognizant of the need to re-examine and re-evaluate the nature and effectiveness of the FFA program at local, state, and national levels.

Wilson (1969) state, "It appears that many of our problems and concerns are at the national level . . . the FFA must remain oriented to the agricultural occupation" (P. 56). McCracken declared, "Research is needed to ascertain the value added by the FFA in preparing students for employment" (1982, p. 114).

A large number of local and state follow-up studies have been conducted on vocational agriculture completers. The research indicated that many master's theses and staff studies have been follow-up studies of past State Farmer degree recipients and past state FFA officers. A review of literature yielded very little research on the occupational status of American Farmer Degree recipients. The only published research related to the follow-up of American Farmer Degree recipients was conducted by W. H. Wayman of West Virginia in 1970.

A major purpose of the Future Farmers of America (FFA) in encouraging members to establish goals and strive toward productive careers in the agricultural industry (Kantner, 1965, p. 122). The FFA degree system, which encourages members to advance through a series of degrees from Greenhand to Chapter Farmer, State Farmer, and American Farmer, is based on goal setting and achievement in a supervised occupational experience program as well as participation in FFA leadership and personal development activities. The American Farmer Degree, the highest degree an FFA member can earn, recognizes exceptional progress toward a student's occupational goal (American Farmer Degree Handbook, 1981).

The number of American Farmer Degrees awarded annually to candidates is based on the state FFA membership. Each state is eligible to receive two degrees for the first 500 members, one degree for the next 500 members, and one degree for each 666 2/3 additional members, rounded to the nearest whole number (Official FFA Manual, 1980, p. 61).

According to the National FFA organization, the purpose of the American Farmer degreee is to:

1. Encourage successful establishment in an agricultural occupation;

2. Develop in FFA members an increased sense of responsibility;

3. Provide the continued opportunitiy for FFA members to acquire knowledge, skills, and leadership abilities;

4. Provide new and greater challenges to those who have earned their state degrees;

5. Encourage FFA members to stay actively involved in the FFA following graduation from high school;

6. Recognize FFA members whose supervised occupational experience programs show comprehensive planning and growth;

7. Provide recognition at the highest level to FFA members for outstanding leadership and cooperation in individual chapter and community activities (American Farmer Degree Handbook, 1981, p. 2).

RATIONALE FOR THE STUDY

The overall goal of the vocational agriculture program is to prepare students for employment in the agriculture industry. Progress toward a career in agriculture is measured through the American Farmer application which is based on the candidates' accomplishments in the vocational agriculture program, and school and community activities. The American Farmer Degree requires a high level of performance in areas important to agricultural occupations. While minimum qualifications are established for the American Farmer Degree, the number of persons receiving the degree each year is restricted to a certain portion of the membership in each state having the highest score. The overall score on the degree application indicates the candidate's progress toward becoming established in agriculture.

PURPOSE OF THE STUDY

The major purpose of this study was to investigate the relationship between the current occupational status of American Farmer Degree recipients in Colorado from 1968 through 1977 and their occupational and educational experiences at the time of application for the degree, selected demographic characteristics at the time of application, and their occupational and educational experiences since receiving the degree.

RESEARCH QUESTION

What was the relationship between the recipients' current occupational status and the following factors describing their progression toward establishment in an occupation?

1. Type and amount of vocational education completed.
2. Type and amount of supervised occupational experience program (S.O.E.P.)
3. Type and amount of employment related to S.O.E.P.
4. Extent of involvement in operation and management of S.O.E.P.
5. Extent of management and operation efficiency of S.O.E.P.
6. Extent of participation in school and community leadership activities.
7. Type and amount of earnings other than S.O.E.P.
8. Total net worth.
9. Total S.O.E.P. score.
10. Total leadership score.
11. Served as a state officer.
12. Application category.

Selected demographic characteristics at the time of application:

13. Father's occupation at the time of application.
14. Mother's occupation at the time of application.
15. Father's level of education at the time of application.

16. Mother's level of education at the time of application.

Occupational and educational experiences since receiving the degree:

17. Level of education.
18. Type of post-secondary school attended.
19. Major area of study at post-secondary level.
20. Employment other than current occupation since receiving the degree.

In addition to the information about current occupational status the following information was collected:

21. Current participation in community activities.
22. Current participation in school related activities.
23. Current participation in church related activities.
24. Current participation in agricultural organizations.
25. Current part-time employment.
26. Plans for future employment in current occupation.

DESIGN AND METHODOLOGY

Population And Design

An ex post facto design was utilized. The target population for the study was 52 Colorado American Farmer Degree recipients from the years 1968 through 1977. The accessible population was 49 American Farmer Degree recipients, since three recipients of the degrees were excluded from the study because their applications were inaccessible.

Data And Instrumentation

A panel of experts scored the American Farmer Degree applications. The panel was selected from teacher educators, state staff, and graduate students in Ohio. The criteria for selecting panel members were based on the individuals' knowledge of the total vocational agriculture program, experience in teaching vocational agriculture, and previous experience using the instrument in evaluating American Farmer Degree applications.

Reader reliability was utilized to ascertain the consistency of the raters. Reader reliability indicates how closely two or more readers agree in rating the same set of papers (Ebel, 1972, p. 276). An application was selected at random and a test, re-test procedure was utilized to obtain the reliability coefficient (.92). The American Farmer Degree applications were randomly divided into five groups of applications. The place, time, and instructions for evaluating the applications were identical for all members of the panel. The scoring system used in evaluating the American Farmer Degree applications was based on a total of one hundred points. The point breakdown per area was:

1. Candidate's vocational education program	0-3 points
2. S.O.E.P.	0-35 points
3. Candidate's place of employment (status)	0-7 points

4. Operation and management	0-3 points
5. Management and efficiency	0-4 points
6. Leadership	
a. Offices held	0-10 points
b. Leadership activities	0-8 points
c. Group activities	0-5 points
d. Recognition	0-6 points
e. School and community	0-7 points
7. Earnings other than S.O.E.P.	0-3 points
8. Candidate's financial statement	0-10 points
Total Points	0-100 points

A telelphone questionnaire was constructed to gather data from the subjects. In designing the questionnaire, many of Dillman's (1978) suggestions were followed. Dillman states,

> "Great care must also be taken in wording questions to determine that they not only read well, but also sound well . . . the complete dependence on oral communication requires that careful attention be paid to the communicability of questions and the overall questionnaire format to ensure respondent concentration" (p. 203).

The telephone questionnaire was examined for content validity by faculty members at The Ohio State University. The instrument was field tested by four graduate students in the Department of Agricultural Education. The field test panel reviewed the instrument visually and audibly for organization and clarity. The instrument was pilot tested with recipients of the American Farmer Degree in Ohio to examine the reliability of the instrument. Reliability, according to Kerlinger (1973), is the accuracy or precision of a measuring instrument.

The American Farmer Degree applications were evaluated by the panel of experts on May 16, 1983. The evaluation process took place under identical conditions with the evaluators receiving the same instructions. The telephone interviews were conducted between May 27 and June 19, 1983. Responses to the instrument were obtained from all 49 recipients of the degree.

Data Analysis

Descriptive statistics were used to analyze and summarize the data. Measures of central tendency, frequencies, percentages, and measures of association were the primary statistics used.

Data were keypunched onto computer cards and analyzed by the Statistical Package for the Social Sciences, (Nie, et al. 1975), and the Information and Research Computer Center at The Ohio State University. Open-ended questions from the interview were synthesized and listed.

The degree or magnitude of associations were calculated between the dependent variable, current occupation, and the independent variables.

SUMMARY OF FINDINGS AND CONCLUSIONS

The findings and conclusions of this study apply to the population of 49 American Farmer Degree recipients in Colorado from 1968 through 1977.

Characteristics Of The Population

The American Farmer Degree recipients were categorized into three groups according to current occupation. Nearly three-fourths (70%) are owners of production agriculture businesses; slightly less than one-fifth (18%) are owners/employees of agricultural businesses; and 12% are owners/employees of non-agricultural businesses. The entire population is male and had an average age of nineteen years, eight months at the time of application for the degree.

Approximately one-half (47%) of all the recipients do not have part-time employment that contributes to their income. Nearly all (92%) of the recipients of the American Farmer Degree plan to continue their current occupation. Approximately four-fifths (82%) of the recipients are involved in community and church related activities, while three-fourths reported being involved with school related activities. Slightly less than one-fifth (17%) of the recipients do not have membership or participate in any agricultural organizations.

Four-fifths of the American Farmer Degree recipients reported having some type of formal education beyond the high school level. Slightly over half earned a Bachelor of Science degree. Over four-fifths of the recipients who graduated from a post-secondary institution majored in agriculture or agricultural-related fields.

Recipients of the American Farmer Degree who receive their degree in the production agriculture area tend to continue work as owners in production agriculture regardless of whether the recipients were high school graduates, two year post-secondary degree recipients, or Bachelor of Science degree recipients. Recipients who receive their American Farmer Degree in the production agriculture area and received a graduate degree are currently owners/employees in non-agricultural businesses.

Since receiving the American Farmer Degree, slightly more than two-fifths of the recipients have had some other type of employment other than their current occupation. Eighty-six percent of the recipients' fathers were full-time farmer/ranchers at the time of application for the American Farmer Degree. Ninety-two percent of the recipients' mothers had a high school education. Fourteen percent of the recipients' fathers and 18% of the recipients' mothers received a four-year college degree.

Slightly less than three-fifths of the recipients had been a state officer in the Colorado FFA Association. Eighty-four percent of all the recipients received their degree in the production agriculture area, while the remaining portion received their degree in agricultural business.

Relationship Between Current Occupation And Selected Factors

In analyzing the relationship between the recipients' current occupation and each section of the American Farmer Degree application, eta coefficients were calculated. The eta coefficients ranged from .05 to .39, indicating negligible to low relationships (See Table 1). One major finding is that there is no relationship between scores on the various sections of the American Farmer Degree application, which indicate the extent of occupational and education experiences at the time of application, and current occupational status. There are negligible to low relationships between current occupation and offices held score, operation and management score, school and community activities score, total leadership score, recognition score earnings other than SOEP score, management and efficiency score, group activities score, supervised occupational experience program score, vocational education program score, total SOEP score, total application score, and leadership activities score. Moderate relationships exist between current occupation and financial statement score and place of employment score.

Cramer's V coefficients calculated to describe the relationship between current occupational status and additional factors ranged from .12 to .48. There are low relationships between current occupation and current part-time employment, father's occupation, school activities, serving as state officer, and mother's occupation. Moderate relationships exist between current occupation and highest level of education, father's education, mother's education, community activities, church activities, application category, plans for future employment, and employment other than current employment since receiving the degree.

IMPLICATIONS

The primary objective of vocational agriculture programs is to prepare students for employment in the agricultural industry. One avenue for measuring a vocational agriculture student's progress toward an agricultural career is through the American Farmer Degree application. This application focuses on the candidate's accomplishments in the vocational agriculture program and in school and community activities. The American Farmer Degree requires a high level of performance in areas essential for success in agricultural occupations. Based on the findings of the study, the following implications are proposed.

For this specific population, the vocational program is accomplishing its purpose in that it prepares students for an occupation in the agricultural industry. Formal education beyond high school does not impede students of vocational agriculture from achieving the goal of having an occupation in agriculture.

TABLE 1

SUMMARY OF SCORES FOR EACH SECTION OF THE AMERICAN FARMER DEGREE APPLICATION

		Current Occupation								
	Total Possible Points	Owner/Employee in Non-Agricultural Business		Owner/Employee in Agricultural Business		Owner in Production Agriculture		Total Population		Eta Coefficient
Section of Application		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
1. Offices Held	10	6.17	2.99	6.67	2.45	6.44	3.07	6.45	2.96	.05
2. Operation and Management	3	2.75	.27	2.72	.44	2.65	.47	2.67	.45	.09
3. School and Community Activities	6	4.46	1.42	4.83	1.54	4.49	1.61	4.55	1.58	.09
4. Total Leadership	35	25.67	5.82	24.25	7.47	25.94	7.40	25.60	7.26	.09
5. Recognition	8	3.63	1.67	3.00	1.91	3.64	1.35	3.52	1.50	.10
6. Earnings other than SOEP	3	1.08	1.07	1.56	1.10	1.41	1.14	1.40	1.13	.12
7. Management and Efficiency	4	3.58	.66	3.17	1.03	3.29	.99	3.31	.97	.12
8. Group Activities	6	5.04	1.81	5.31	1.46	5.38	.88	5.33	1.13	.17
9. SOEP	35	27.00	4.10	23.89	4.91	25.37	4.84	25.30	4.78	.18
10. Vocational Education Program	3	1.50	.55	1.50	.50	1.69	.51	1.63	.51	.18
11. Total SOEP	65	44.25	5.16	43.61	8.35	46.85	7.67	45.94	7.57	.19
12. Total Application	100	69.92	8.93	67.86	11.76	73.12	10.86	71.76	10.83	.20
13. Leadership Activities	8	6.38	1.46	4.44	2.62	5.99	2.26	5.76	2.26	.28
14. Financial Statement	10	4.00	1.90	5.67	2.74	6.76	2.35	6.22	2.38	.37
15. Place of Employment	7	4.33	.82	5.11	1.27	5.68	1.09	5.41	1.10	.39

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CRITIQUE

Factors Associated With Developing An Understanding Of SOEP As Perceived By Oregon Vocational Agriculture Teachers

by

Ray Herren and Lee Cole

Factors Limiting Vo Ag Student Participation In SOE Programs In Nebraska

by

Richard M. Foster

The Relationship Between Characteristics Of Colorado's American Farmer Degree Recipients From 1968 To 1977 And Their Current Occupational Status

by

Stacy A. Gartin and James A. Knight

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FACTORS ASSOCIATED WITH DEVELOPING AN UNDERSTANDING OF SOEP AS PERCEIVED BY OREGON VOCATIONAL AGRICULTURE TEACHERS

by

Ray Herren and Lee Cole

Several recent studies in Agricultural Education have been completed that have attempted to determine the reasons for the reduced emphasis on the SOEP component of the high school vocational agriculture programs. The main purpose of the study was to determine the sources of Oregon vocational agriculture teachers' understanding of the concepts of SOEP.

The introduction was well organized and logically developed to build a need for the study. The purpose, objectives, and procedures were well presented. The study was descriptive in nature and potential errors were addressed in the following ways with concerns and suggestions noted.

A large randomized sample was selected representing some 3/4 of the population of Oregon vocational agriculture teachers.

The response rate of 91 percent was considered adequate and a reference was sited to document this.

The researchers describe the use of a seven member panel of experts to construct the instrument. In addition, the instrument was field tested. There was no mention made of any test to determine reliability of the instrument nor were any changes noted after field testing. The data were analyzed using t-test, frequency counts, and means. However, the alpha level and the t-test results were not given.

Since the so called "grey" area was removed from the study leaving the "strong" and the "weak" SOEP program groups to be tested which reduced the sample to 57 teachers, perhaps it would have been well to have surveyed the population when it would have required only 30 additional teachers.

One concern was the apparent difference in responses from item to item. That is, Table 1 shows 85 responses to the first item and only 44 to item 18. This should have been noted and explained.

The conclusions were appropriate and were based on the t-test results and rank order of the factors. Recommendations were also appropriate and were based on the rank order of the factors associated with the development of understanding of SOEP.

FACTORS LIMITING VO AG STUDENT PARTICIPATION IN SOE PROGRAMS IN NEBRASKA

by

Richard M. Foster

This paper dealt with an important issue to Agricultural Education, the SOEP. The primary purpose of the study was to identify factors limiting student participation in SOE programs in Nebraska as perceived by the instructors. Since SOEP is a very important part of the program, the researcher is to be commended for his efforts.

The introduction was very brief probably because several tables were included in the paper adding to the length resulting in a shorter introduction to meet page number constraints. The objectives were clearly stated and were addressed in the study. A 50 percent random sample was selected and a follow-up of the non-respondents was conducted. The follow-up of the non-respondents was done and since no difference was found between the initial respondents and the non-respondents, the two were pooled together to form a final response of 91 percent. It would perhaps have been easier to understand had the initial response number been reported.

The instrument appeared to be well developed and a Cronback Alpha reliability coefficient was computed for each of the five dependent variables. One point that was not clear and would improve the paper would be to include the alpha level and note the analysis of variance results. It was suggested that a Tuckey post hoc test was to be used to determine where actual difference existed. Since a significant F was not reported with ANOVA, it was not clear that significance was found.

The findings of the study seemed well written and were appropriate from the results and the recommendations were equally well done.

THE RELATIONSHIP BETWEEN CHARACTERISTICS OF COLORADO'S AMERICAN FARMER DEGREE RECIPIENTS FROM 1968 TO 1977 AND THEIR CURRENT OCCUPATIONAL STATUS

by

Stacy A. Gartin and James A. Knight

This paper is very well written. The introduction cites readings from literature that clearly demonstrates the importance of the problem under study. The purpose and objectives of the study were clearly presented. The researchers should be commended for their procedures for developing the instrumentation.

The major purpose of the study was to investigate the relationship between the current occupational status of American Farmer Degree recipients in Colorado from 1968 through 1977 and their occupational and educational experiences at the time of degree application, selected demographic characteristics at the time of application, and their occupational and educational experiences since receiving the degree.

Since the entire population was used, sampling error was not a threat to the study. The researchers were very thorough in describing procedures employed to develop the instrumentation using a panel of experts and the procedure was clearly outlined for establishing reader reliability as well as using a test retest procedure to obtain a reliability coefficient of (.92). It was also noted that the instrument was pilot tested. However, the results of the pilot test in Ohio to examine reliability of instrument or changes made following the pilot test was not reported.

The statistical analysis package for the social sciences was referenced which gave some insight to the statistical procedure. It would have been helpful to the reader to have referenced the specific statistic used, that is Cramer's V. While appropriate, it is a fairly obscure statistic. It would help the reader in interpreting the results if the number of degree recipients responding in each category was given especially when reading the sentence, "Recipients who receive a graduate degree are currently owners/employees in non-agricultural businesses." This is in conflict with the implication statement, "Formal education beyond high school does not impede students of vocational agriculture from achieving the goal of having an occupation in agriculture."

The implication section was fairly brief but well written indicating that for the specific population the vocational program is accomplishing it's purpose of preparing students for occupations in the agricultural industry. Since only weak to moderate relationships were found, the implication section was appropriately brief.

THE RELATIONSHIP BETWEEN JOB SATISFACTION AND TEACHER PERFORMANCE OF VOCATIONAL AGRICULTURE TEACHERS

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THE RELATIONSHIP BETWEEN JOB SATISFACTION AND TEACHER PERFORMANCE OF VOCATIONAL AGRICULTURE TEACHERS

INTRODUCTION

Since the passage of the Smith-Hughes Act in 1917, the federal funds have provided for public vocational agricultural education throughout the United States. From that beginning, vocational agriculture has grown and changed in areas such as curriculum and agricultural technology. In order to provide effective vocational programs, placement and retention of qualified teachers in new and existing vocational programs in agriculture is essential.

Craig (1983) and Knight (1978) indicate that many teachers leave teaching after a few years in the profession. This seems to imply a dissatisfaction with some aspect of teaching to such a degree that other employment appears more satisfying. According to Gruneberg (1976), there is a definite relationship between job turnover and job satisfaction. In addition, there may be teachers remaining in the profession who are relatively dissatisfied but not to the point of leaving teaching. Some possible reasons they remain in teaching may be the insecurity of changing jobs, tenure, family ties and obligations, and lack of available jobs in their geographical area (Chapman, 1984). Since retention of teachers appears to be important to success of vocational agriculture programs, a study of factors influencing one's satisfaction or dissatisfaction with teaching seems critical. Moreover, recent emphasis on the quality of teachers and teaching has raised the issue of assessing teacher performance and effectiveness of those in the profession (National Commission on Secondary Vocational Education, 1984). Consequently, two important questions to raise are: (a) How satisfied are those teachers remaining in the profession?, and (b) Does this satisfaction have any influence on their performance?

One theory that offers a plausible explanation of the relationship between job satisfaction and performance is Expectancy Theory postulated by Porter and Lawler (1968). According to the theory, satisfaction is a function of a person's judgment regarding the perceived equity of the reward received for effort expended. This judgment, in turn, influences one's estimates of the probability that future efforts will be rewarded. A reward, in this context, is considered to be a desirable state of affairs received from one's own thinking or the actions of other's (intrinsic and extrinsic outcomes) (Porter & Lawler, 1968). These intrinsic and extrinsic measures are positively related to performance (Abdel-Halim, 1980). In addition, the idea of a performance-reward contingency as a meditator to the performance-satisfaction relationship, as postulated in the Expectancy Theory, is also indicated as a substantial element (Kesselman, Wood, & Hazen, 1974).

Realizing the teaching profession may be different from the business world in areas such as the nature of the job, interpersonal relations, compensation, and supervision, it would be beneficial to determine what relationships exist between job performance and job satisfaction of teachers.

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the relationship of teacher performance, as measured by performance ratings and student achievement, to job satisfaction of vocational agriculture teachers in Louisiana. This study was conducted to accomplish the following specific objectives:

1. Determine the job satisfaction of vocational agriculture teachers.
2. Determine the teacher performance of vocational agriculture teachers as perceived by their respective high school principals.
3. Determine if a relationship exists between teacher performance and job satisfaction.
4. Determine if job satisfaction factors can be identified which comprise a model explaining a significant portion of the variance in job performance ratings of vocational agriculture teachers.

METHOD

Three instruments were used in the collection of data for this study. One instrument was used to measure job satisfaction and two were used to assess teacher performance.

A variety of instruments have been designed to measure job satisfaction. The instrument selected was the long form of the Minnesota Satisfaction Questionnaire (MSQ) developed by Weiss, Dawis, England, and Lofquist (1967). The long form consists of 20 different scales. The 20 scales were classified as intrinsic job factors (13 scales) and extrinsic job factors (7 scales). The intrinsic factors were social service, moral values, creativity, ability utilization, activity, achievement, vanity, responsibility, independence, authority, social status, co-workers, and recognition. Extrinsic factors were security, supervision--human relations, working conditions, supervision--technical, company policies/practices, advancement, and compensation. This classification, suggested by the authors of the MSQ, was confirmed through a factor analysis using the data collected.

There is a total of 100 items which contain five items for each of the 20 scales. The items appear in blocks of 20 so that items for each scale appear at 20 item intervals. A 5-point Likert format was used to record responses.

Reliability and validity have been established for the MSQ. However, the authors of the instrument suggest that reliability coefficients be computed for the group on which the MSQ is used because reliability may tend to vary across groups. To carry out this suggestion, a Cronbach's alpha reliability coefficient of .95 was computed using data from the group involved in this study.

Norm group percentile scores for a variety of occupations has been established for the MSQ. Job satisfaction score comparisons can be made with a selected norm group that is similar to the one under study to determine the relative satisfaction to a general population of workers. Weiss et al. (1967) suggest that if there is not an occupational group similar to the one under study, comparisons should be made to the norm group entitled "Employed Non-Disabled." This group includes skilled and unskilled blue collar workers, skilled and unskilled white collar workers, and professional personnel. The authors further suggest that when conducting the comparison, a percentile score of .75 or higher would be indicative of a high degree of satisfaction, .25 or lower would represent a low level of satisfaction, and scores in between would reflect a moderate level of satisfaction (Weiss et al., 1967).

The instrument to assess student achievement was designed by the researcher to measure the students' knowledge of basic vocational agriculture as taught at the Vocational Agriculture I level in Louisiana. The test contained 50 multiple choice items and addressed the different subject matter areas covered in Vocational Agriculture I. Content validity of the instrument was established through a review by a panel of vocational agriculture teachers. In addition, the test was field-tested using two Vocational Agriculture II classes totaling 64 students. An internal consistency reliability coefficient of .72 was calculated from field test data using the Kuder-Richardson-20 formula (Downie & Heath, 1965). Minor changes were made on some items as indicated by the discrimination index calculated from the field test data. As a check, a Cronbach's alpha reliability coefficient of .73 was calculated using the data from the respondents in this study. It was calculated using the fall pretest data.

A third instrument was used to assess the performance of the instructor in terms of the principal's rating. A 21-item evaluation instrument designed by Moore, Yoder, and Armstrong (1980) was used to assess the principals' perceptions of three categories of teacher behavior: (a) the teacher's teaching skills (nine items), (b) knowledge of subject matter (six items), and (c) involvement in the total program (four items). In addition, two items asked for an overall assessment of the teachers' knowledge and skills and teaching effectiveness. The items on the assessment instrument came from a review of literature which identified them as highly correlated with teaching effectiveness (Moore et al., 1980). Each principal was asked to rate the teacher on each item on a scale of 1 to 99. One is low, while 99 is high. Any number between 1 and 99 could be selected by the principals to indicate their evaluation on each item. The score for each category of teacher performance was determined by summing the principals' ratings of all the items in that category. The evaluation instrument has an established reliability coefficient of .96 (Moore et al., 1980). A Cronbach's alpha reliability coefficient of .97 was calculated for the group used in the study.

The target population for this study was the vocational agriculture teachers teaching Vocational Agriculture I in secondary institutions in Louisiana. The frame was identified using the 1982-83 Louisiana State Department of Education Directory of Vocational Agriculture Programs and Teachers. A random sample of 50 programs was selected using a table of random numbers. Since Gay (1981) stipulates that at least 30 subjects are needed to establish the existence or non-existence of a relationship among variables, the researcher selected 50 individuals in this study to go beyond this minimum recommended sample size. Teachers who taught Vocational Agriculture I were identified for each program in the sample. Principals at these schools were asked to evaluate these teachers.

Data collection procedures included sending a pretest to be administered by the teacher to the Vocational Agriculture I students and the MSQ to be completed by the instructor in the fall. The teacher assessment form was sent to the principals in late March. Following the mailing to the principals, the posttest and another MSQ were sent to the teachers.

A total of 45 useable responses were returned. These useable responses were defined as those who returned the pretests, the MSQ, and had principals who returned the teacher performance assessment instrument. Forty-five also returned complete responses on the second mailing except for two who failed to return the MSQ. The initial plan was to calculate a mean score on the job satisfaction measure between the first and second administration of the MSQ. This was to give a determination of job satisfaction for the time between measurement points. However, since there was a small sample size and every respondent was needed, the decision was made to conduct a paired t-test to determine if differences existed between the pretest and posttest MSQ scores. If differences did not exist, the pretest MSQ scores were to be used in the analysis in the study. This would allow data to be used from the two teachers who did not return the MSQ the second time but did on the first response. This would give data from 45 teachers instead of just 43. If differences did exist, the data from the two who did not return the MSQ the second time would be eliminated, yielding data from only 43 teachers.

Following the *t*-test, it was found that no significant differences in score existed on any scale of the MSQ or the overall satisfaction score obtained. Therefore, the fall MSQ scores were used in the data analysis that allowed for use of data from 45 teachers instead of 43.

RESULTS

Shown in Table 1 are the frequencies and percentages of the vocational agriculture teachers falling into the ranges of mean job satisfaction score categories. The mean general satisfaction score was 76.62. No teacher had a score lower than 58. Few teachers had a job satisfaction score higher than 90. Mean scale satisfaction scores are presented in Table 2. The highest score possible on each scale was 25.

Table 1

Categories of General Job Satisfaction Score

Score Category	Frequency	Percent
50-59	2	4.4%
60-69	7	15.6%
70-79	18	40.0%
80-89	15	33.3%
90-100	3	6.7%
Total	45	100.0%

Table 2

Vocational Agriculture Teachers' Mean Score on Scales of the MSQ

Scale	Mean	*SD*
Intrinsic		
Social service	21.93	2.22
Moral values	21.66	2.44
Creativity	21.24	2.72
Ability utilization	21.22	2.80
Activity	21.22	2.52
Achievement	21.09	2.43
Variety	20.96	2.52
Responsibility	20.95	2.41
Independence	20.68	2.49
Authority	19.04	2.95
Social status	19.04	2.64
Co-workers	18.93	3.39
Recognition	17.28	4.57
Extrinsic		
Security	20.24	3.19
Supervision--Human relations	18.22	4.76
Working conditions	17.22	4.93
Supervision--Technical	17.13	4.63
Company policies/practices	16.24	4.98
Advancement	15.44	4.72
Compensation	14.84	5.02

Data presented in Table 3 show the mean performance ratings of the teachers on the various items of the performance assessment instrument completed by principals. The highest mean performance assessment rating for all teachers on any one item was 84.08 regarding the teacher's involvement in the FFA. The lowest mean value was 49.64 on the item relative to the teachers' participation in vocational instruction for adults. The mean for the overall assessment of the teachers' knowledge in agricultural subject matter was 84.06. In addition, the mean for the overall teaching effectiveness assessment of these teachers was 78.20.

On the student achievement assessment, the mean pretest and posttest scores on a scale of 100 points were 36.80 and 48.46, respectively. The mean student gain from pretest to posttest was 11.66. A paired $\underline{t}$-test was used to determine if a significant difference existed between pretest and posttest scores. After conducting a $\underline{t}$ test, a highly significant difference was found between pretest scores and the scores on the posttest, $\underline{t}(44) = 7.88$, $\underline{p} < .01$.

A Pearson $\underline{r}$ was used to determine the relationship between job satisfaction and job performance. No significant relationships were found between the overall job satisfaction score and "Knowledge of Subject Matter", $\underline{r} = .24$, $\underline{p} > .05$, and "Involvement in the Total Program", $\underline{r} = .25$, $\underline{p} > .05$. However, overall job satisfaction was significantly related to the "Teaching Skills" assessment of the vocational agriculture teachers, $\underline{r} = .26$, $\underline{p} < .05$. No significant relationship was found between job satisfaction and student achievement as defined by the gain score on the achievement test, $\underline{r} = .06$, $\underline{p} > .05$.

A Pearson $\underline{r}$ was also calculated to determine the relationship between student gain scores on the student achievement test and the three categories of the performance assessment form used to assess teacher performance. Results indicated that there was no correlation between student achievement and teacher performance ratings on the three categories of the supervisory assessment form.

An independent multiple regression analysis was conducted on each dependent variable (Knowledge of the Subject Matter, Teaching Skills, and Involvement in the Total Program) to determine if a significant model of job satisfaction factors explaining a portion of the variance in teacher performance could be identified. If significant models were found, the independent variables in each model were placed into PROC REG (SAS, 1982) to analyze multicollinearity of the independent variables. If multicollinearity problems existed, adjustments were made by selecting the one variable that added the most explanation of the variance in the dependent variable and maintained a significant model. Multicollinearity problems were found to exist between the independent variables "Independence" and "Responsibility" with respect to the dependent variable "Knowledge of Subject Matter." These were placed individually into separate multiple regression analyses with other independent variables that were identified in the model. When "Independence" was included, a significant model emerged. "Responsibility" placed in the analysis yielded a model which was not significant. Therefore, "Independence" was retained as an independent variable, while "Responsibility" was eliminated.

Table 3

Supervisory Assessment Items Means for Vocational Agriculture Teachers

Item	Mean	SD
Teaching Skills		
The enthusiasm of the teacher	81.42	17.54
The teacher's classroom control	80.60	21.29
The teacher's ability to plan lessons	78.00	16.97
The teacher's ability to use a variety of teaching methods	75.64	18.64
The teacher's ability to relate to students	75.35	22.70
The teacher's management and housekeeping in the ag. lab	75.31	20.94
The teacher's ability to hold the attention of the class	74.20	23.17
The teacher's ability to motivate students	73.86	22.96
The teacher's ability to use questions while teaching	73.80	21.73
Involvement in the Total Program		
The teacher's work with the FFA	84.08	14.33
The teacher's supervision of SOEP's	74.42	23.14
This teacher's participation in professional activities	72.86	27.73
The teacher's participation in vocational instruction for adults	49.64	35.57
Knowledge of the Subject Matter		
The teacher's knowledge and skills in animal science	80.20	18.78
The teacher's knowledge and skills in agricultural mechanics	78.97	20.48
The teacher's knowledge and skills in crop production	78.66	19.44
The teacher's knowledge and skills in horticulture	77.97	19.01
The teacher's knowledge and skills in natural resources and conservation	77.35	19.09
The teacher's knowledge and skills in farm management	77.04	24.78
The teacher's overall knowledge and skills in agricultural subject matter	84.06	13.07
The overall teaching effectiveness of this teaching	78.20	19.67

Significant models of job satisfaction variables were found which explained a portion of the variance in all three performance assessment variables. Data in Table 4 show the partial regression coefficients for each job factor and the total R^2 for the model for "Involvement in the Total Program". This model explained 30.69% of the variance in this measure of teacher performance. Shown in Table 5 are the partial regression coefficients for each job factor and the total R^2 for the model for "Knowledge of Subject Matter." This model explained 28.62% of the variance in the dependent variable. Finally, results shown in Table 6 present information regarding the model identified with "Teaching Skills." The model explained 14.62% of the variance in this dependent variable.

Most of the variables selected in the significant models were also the variables with which the vocational agriculture teachers were least satisfied. The intrinsic factors identified in the significant models were Ability Utilization, Independence, Social Status, and Authority. The extrinsic factors were Advancement, Company Policies and Practices, Compensation, Supervision--Technical, Work Conditions, and Security.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Vocational agriculture teachers in this study appear to be moderately satisfied with their jobs (45th percentile). Satisfaction tended to be higher with intrinsic job factors while lower satisfaction levels were associated with extrinsic job factors.

Teacher performance, as perceived by school principals, reflected that teachers generally appeared to have a knowledge of the subject matter relative to teaching vocational agriculture. Based on the rank order of means, they appeared to have a better knowledge of animal science, agricultural mechanics, and crop production than they did relative to horticulture, conservation, and farm management. This may be expected since the teachers in the study taught in production agriculture programs. These programs typically emphasize the three subject matter areas with which the teachers seemed most knowledgeable. Compared to knowledge of the subject matter, the teachers were perceived to be relatively lower in their teaching skills in the classroom. Ability to motivate students and ability to use questions while teaching seemed to be the teaching skills with which the teachers were relatively less skillful. Teacher involvement was strong in FFA activities. However, they were less participative in other aspects of the total program such as supervision of SOEP's, participation in professional activities, and working with adults. From this discussion, it seems that increased emphasis may need to be placed on continued development of teaching skills and added participation in the total program.

Table 4

Multiple Regression Analysis of Involvement in the Total Program by MSQ Scales

Scales	B	t	Prob > t
Ability utilization	8.31	1.49	.1449
Company policies and practices	4.30	1.54	.1324
Compensation	-1.99	-.76	.4505
Independence	-10.88	-1.64	.1093
Security	6.15	1.15	.2565
Social Status	-8.96	-1.69	.0986
Co-workers	3.60	.89	.3780

Note. $R^2 = .3069$, $p < .0439$
Note. B = partial regression coefficient for each job factor

Table 5

Multiple Regression Analysis of Knowledge on the Subject Matter by MSQ Scales

Scales	B	t	Prob > t
Advancement	-.74	-1.40	.1684
Authority	-2.07	1.99	.0538
Company policies and practices	1.52	2.55	.0150
Independence	-1.34	-1.26	.2159
Social Status	-2.03	-1.99	.0530
Supervision--Technical	.36	.64	.5272

Note. $R^2 = .2862$, $p < .0364$
Note. B = partial regression coefficient for each job factor

Table 6

Multiple Regression Analysis of Teaching Skills by MSQ Scales

Scales	B	t	Prob > t
Co-workers	1.13	1.09	.2806
Supervision	.96	1.32	.1952

Note. $R^2 = .1462$, $p < .0362$
Note. B = partial regression coefficient for each job factor

When satisfaction level of all factors were considered, certain intrinsic and extrinsic factors were found to significantly explain a portion of variance in teacher performance. This tends to be congruent with the model suggested by Porter and Lawler (1968) which proposes that satisfaction is influenced by both intrinsic and extrinsic rewards or factors. Job satisfaction, in turn, impacts on performance in an imperfect relationship being moderated by several variables. Consequently, it is not surprising that job satisfaction does not account for a large amount of the variation in teacher performance explained by the Porter and Lawler model even though the explanatory model was a significant one. One would not expect a perfect relationship when other variables in the model, such as abilities, role perceptions, and effort, are also defined as explaining a portion of the variance in performance. It would seem that from the model, previous arguments as to whether satisfaction causes performance or performance causes satisfaction could better be viewed in terms of a interdependent relationship between satisfaction and performance. Both relationships are important in defining and explaining the range of experiences on the job relative to these two variables.

It appears that these teachers may not fit the concept of one who willingly sacrifices extrinsic benefits for an internal satisfaction due to participation in a worthy and honorable occupation. Rather, they seem to be interested in receiving benefits such as compensation and security, as are other employees in other occupations (Kesselman et al., 1980; Herzberg, Mausner & Snyderman, 1959). The teaching profession, however, does not normally offer extrinsic rewards for outstanding performance. This may be reflected in the fact that a relatively lower satisfaction level with respect to some extrinsic variables does appear to influence performance.

It should be noted here that even though significant models of job satisfaction factors explaining a significant portion of the variance in performance were identified, most of the variables within each model did not make a statistically significant contribution to the models.

Therefore, one should consider the variables in combination when interpreting each model. The negative coefficient of some of the variables of satisfaction seem to indicate that simply increasing satisfaction with those factors may not necessarily result in an increase in performance. For example, it may be premature to assume that simply increasing one's salary, independence, social status, and opportunities to advance will necessarily increase one's performance even though it may well create feelings of satisfaction with these factors.

Recommendations

Based on the findings of the study, the following recommendations are suggested:

1. Continued emphasis should be given to teaching skills in the preservice preparation of these vocational agriculture teachers.
2. Future research should be conducted to determine if the job satisfaction of vocational agriculture teachers in the nation is similar to that of vocational agriculture teachers in Louisiana.
3. Future research should be designed to determine the amount of variance explained by the remaining variables such as value of reward, perceived effort to reward probability, and effort impacting on the satisfaction to performance feedback loop as suggested in the Porter-Lawler model.
4. Further research is suggested to:
    a. Discover other job factors that may impact on job satisfaction of teachers.
    b. Determine if similar findings would be found if different measures of job satisfaction and performance were used.
5. Future researchers conducting similar studies may want to consider alternative ways of assessing teacher performance. For example, if achievement tests are used to assess teacher performance, specific objectives taught in the classroom should be assessed on the test. This would require better coordination between the teachers involved in the study and the researcher.
6. Even though Kowalski (1978) indicates that principals' assessment of teacher performance is most commonly used in this type of research, Bartz and Townsend (from Bartz, 1977) suggest the following alternatives: 1) student ratings, 2) peer ratings, 3) self rating. Using these alternatives, or others, in future research may yield different results than those obtained from principals' ratings and add information as to how we can best assess the relationship between job satisfaction and teacher performance.
7. Administrators are encouraged to consider the job satisfaction factors identified as influencing performance. After due consideration, change in various school policies and practices may be warranted to enhance performance of teachers.
8. It is advised that when future researchers study job satisfaction and teacher performance, they should address component parts of both variables. Valuable insights may be untapped in research regarding these variables if one considers them as unidimensional rather than multidimensional. This is consistent with recommendations made by Wanous and Lawler (1972).

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PROFESSIONAL PHILOSOPHY, TEACHER BELIEFS AND TEACHER EFFECTIVENESS: IS THERE A RELATIONSHIP?

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INTRODUCTION

Teacher educators in agricultural education are in the business of educating qualified, effective teachers. Pressures for accountability have forced teacher educators into quantifying the effectiveness of that education. To accomplish this, the major thrust of recent research has been to identify professional and technical competencies needed by agricultural teachers. Most of these studies have resulted in lists of professional and technical competencies developed from the opinions of individuals in the profession and validated by agricultural teachers, teacher educators, and state supervisors. More than 25 of these competency studies have been conducted in agricultural education in the past 10 years (Rush, 1984).

Effective teachers, however, can neither be identified simply by their command of technical subject matter nor their use of a particular instructional methodology. As Loftis and Ray (1974) point out, the teacher plays a much larger role in the educational process than simply as a disseminator of information, and therefore must possess more than a series of technical competencies. The teacher plays the crucial role in the educational process, not simply as a user of techniques, but as an integral component of the educational environment. How to prepare that integral component is not a matter of record, but it is clear that research must move beyond a simple identification of competencies.

One factor with potential for influencing teacher effectiveness is the beliefs and philosophies held by teachers. Both teachers and teacher educators in agricultural education have emphasized the importance of a sound instructional philosophy (Cheek & Beeman, 1978). In December of 1975, the Agricultural Education Division of the American Vocational Association (AVA) adopted The Philosophy of Vocational Agricultural Education. That statement listed key concepts "that provide a stability and direction" to the vocational agriculture program (Agricultural Education Division, 1976). Research has indicated that this emphasis on teacher philosophy and beliefs is justified. Several studies on teacher effectiveness have indicated that teacher beliefs influence, at least in part, the decisions teachers make in the classroom (Ajzen & Fishbein, 1971). Furthermore, educators have stressed in the literature that a stated philosophy: is essential for development of program standards and for program evaluation (Dean, 1982); assists in setting program direction; and serves an interpretive function, assisting teachers in understanding why they do what they do and in evaluating new methods and curricula (Baatz, 1980). Research also suggests certain philosophical beliefs are directly related to effective teaching (Fabian, 1976; Gooding, 1969).

Of critical importance to teacher educators is that they can have an impact on the philsophies of teachers who participate in their programs. Cheong (1974) demonstrated that a teacher education program can change the philosophical orientation of students and that those students will implement the learned philosophy in their teaching practices. Thoman (1981) found that teachers educators had more influence than any other group in the development of the individual philosophies of agricultural teachers.

The problems for teacher educators are whether the beliefs espoused by the profession are those that impact teacher effectiveness and what other beliefs might have an impact on effectiveness.

PURPOSE AND OBJECTIVES

The purpose of this research was to investigate the relationships among teacher effectiveness, teacher beliefs and philosophies, and selected demographic variables.

Research Questions

Specific research questions were:

1. What is the relationship between teacher effectiveness and teacher agreement with the philosophical statement adopted by the Agricultural Education Division, AVA?
2. What is the relationship between teacher effectiveness and teacher agreement with each of the key concepts adopted by the Agricultural Education Division, AVA?
3. In what ways are beliefs about vocational agriculture held by the teachers identified as the most effective different from the beliefs held by the teachers identified as the least effective?
4. What is the relationship between teacher effectiveness and selected demographic variables?

PROCEDURES

Data Sources

The data for this study were collected from agriculture teachers in Virginia. Teachers identified as the most and least effective in the state were used to answer the research questions. Data were also collected from the general population of 368 agricultural teachers in Virginia.

Methods

The research methodology used in this investigation was descriptive in nature and descriptive statistics were used to describe the relationships of interest. Since the study dealt with a population, inferential statistics were not deemed appropriate and were not used.

The sample of most and least effective agricultural teachers was obtained by asking state supervisors to identify 11% of the most and least effective teachers in their particular area using a mutually developed and agreed upon list of criteria. The supervisors were also asked to identify 3% of their teachers as alternates for each of the categories. The names of the teachers identified were then randomized and presented to a panel of teacher educators from the two teacher training institutions in Virginia. The teacher educators were asked to identify the teachers on the list as being in the most or least effective category. Only the teachers upon which the state supervisors and teacher educators agreed were used in the study.

Forty teachers were eventually included in the most effective teacher group and 33 teachers were included in the least effective teacher group.

Data for this study were collected via a mailed instrument. The instrument was sent to all agricultural teachers in Virginia. The instrument was mailed with a cover letter asking for the teachers' cooperation and informing them that their responses would entitle them to a chance at winning a personal computer. Four additional follow-ups were conducted including a postcard, a letter and additional survey, a telephone call and several personal contacts. Return rate for the most and least effective teachers was 94.5% and for the entire population of teachers was 77.4%.

The instrument used for this study consisted of three parts: (a) an open-ended question asking the teachers to list the strong beliefs they held that were important to quality programs in agricultural education; (b) a list of philosophical concepts taken from The Philosophy of Vocational Agricultural Education adopted by the Division of Agricultural Education, AVA (1976), and questions seeking demographic information on whether the teachers taught junior high and/or senior high school, level of education attained by the teacher, age of the teacher, years teaching in current position, and total years of teaching experience.

The open-ended question was designed to answer research question number 3, "In what ways are beliefs about vocational agriculture held by the teachers identified as the most effective different from the beliefs held by the teachers identified as the least effective?" The open-ended question was analyzed using classical content analysis using the theme as the unit. The data were summarized by describing the percentages of themes indicated by each of the teacher groups. The extent of the teachers' agreement with each of the items on part "b" of the instrument was evaluated using a 1 to 6 Likert-type scale with 1 representing "Strongly disagree," 2 "disagree," 3 "Tend to disagree," 4 "Tend to Agree," 5 "Agree," and 6 "Strongly Agree." To answer research question number 1, ratings of the concepts were summed and averaged to form an overall rating of agreement with the philosophy adopted by the Agricultural Education Division, AVA (1976) for each respondent. A biserial correlation coefficient was calculated comparing agreement with the total philosophy and teacher effectiveness.

To answer research question number 2, a biserial correlation coefficient was calculated for each of the concepts, comparing the most and least effective teacher groups.

Effect sizes for purposes of discussing the data for research questions 1 and 2 followed Cohen's (1969, pp. 76-77) recommendations: Small effect size--r = .10; medium effect size--r = .30; Large effect size--r = .50.

RESULTS

Research Question Number 1

What is the relationship between teacher effectiveness and teacher agreement with the philosophical statement adopted by the Agricultural Education Division, AVA?

The most effective teachers and the least effective teachers indicated that they agreed with the philosophy with mean ratings of 5.279 and 5.190 respectively. A positive correlation coefficient of .14 indicated that the most effective teachers agreed more strongly with the philosophy than the least effective teachers, but that the effect size was small.

Research Question Number 2

What is the relationship between teacher effectiveness and teacher agreement with each of the key concepts adopted by the Agricultural Education Division, AVA?

Ratings by both the most effective and least effective teachers indicated agreement with all of the concepts representing the philosophy of the profession. The ratings ranged from means of 4.72 to 5.77. The most effective teachers had mean ratings below 5.0 for three concepts and mean ratings for four concepts above 5.5. The least effective teachers had mean ratings for five concepts under 5.0 and mean ratings for three concepts above 5.5. Correlations between group membership and strength of agreement for those concepts with at least a small effect size of .1 are presented in Table 1. The most effective teachers rated the first 14 concepts higher than did the least effective teachers, while the final seven concepts were rated higher by the least effective teachers. All but one of the correlation coefficients represented a small effect size meaning that the amount of variance for each of the concepts that could be explained by group membership was between one and nine percent. The concept that vocational agriculture should be developed and conducted as part of educational systems had a medium effect size of .30.

Research Question Number 3

In what ways are beliefs about vocational agriculture held by the teachers identified as the most effective different from the beliefs held by the teachers identified as the least effective?

Of the 34 categories of beliefs identified by the content analysis, 11 showed differences of 10 percentage points or more between the groups. Eight of those categories were indicated more often by the most effective teachers while three were indicated more often by the least effective teachers. The category with the largest difference between the groups was the importance of the development of affective skills. About 46% of the most effective teachers indicated that category compared to only 3.3% of the least effective teachers. On the other hand, 26.7% of the least effective teachers expressed a belief that students attracted to the program should be interested and intelligent compared to 2.6% of the most effective teachers. Other beliefs with large differences between the most and least effective teachers included those dealing with teacher commitment, meeting student needs, and the importance of Supervised Occupational Experience. The eleven specific categories with more than a 10% difference between the groups, and the percentage of most and least effective teachers indicating those categories are presented in Table 2.

Table 1
Means and Correlations of Teacher Agreement With Selected Philosophical Concepts.

Concepts		Teachers Most[1]	 Least[2]	r
Vocational agriculture should be developed and conducted as part of educational systems.	M SD n	5.667 .577 39	5.333 .802 30	.30
Vocational agriculture should be unique in its instructor qualifications.	M SD n	5.395 .638 38	5.033 1.245 30	.23
Vocational agriculture should be unique in its student goals.	M SD n	5.308 .694 39	4.967 1.129 30	.23
Vocational agriculture should be responsive to the needs of the individual for the skills of citizenship.	M SD n	5.333 .737 39	5.067 .740 30	.22
Vocational agriculture should provide a time commitment of sufficient length and intensity to provide instruction important to the successful entrance of the student into the chosen occupation or entrepreneurship.	M SD n	5.205 .570 39	4.933 .944 30	.22
Vocational agriculture should provide a time commitment of sufficient length and intensity to provide instruction important to the successful advancement of the student within the chosen occupation or entrepreneurship.	M SD n	5.077 .623 39	4.800 .925 30	.22

Note. Concepts chosen for this table were those having at least a small effect size of .1 or greater. Means are based on extent of agreement with 1 representing strongly disagree and 6 representing strongly agree.

[1] Most = teachers judged as being the most effective.

[2] Least = teachers judged as being the least effective.

Table 1 continued.

		Teachers		
Concepts		Most[1]	Least[2]	r
Vocational agriculture should relate to the productivity of people in terms of their willingness to produce efficiently.	M	5.436	5.200	.19
	SD	.598	.925	
	n	39	30	
Vocational agriculture should cultivate and nurture public support at all program levels.	M	5.436	5.200	.19
	SD	.640	.887	
	n	39	30	
Vocational agriculture should be available for youth at the high school level.	M	5.744	5.600	.17
	SD	.498	.563	
	n	39	30	
Vocational agriculture should be unique in its facility and equipment needs for instruction.	M	5.308	5.067	.16
	SD	.766	1.081	
	n	39	30	
Vocational agriculture should be responsive to the needs of the individual for developing a positive attitude towards learning.	M	5.385	5.200	.15
	SD	.673	.847	
	n	39	30	
Vocational agriculture should be responsive to the needs of the individual for the skills of communication.	M	5.205	5.067	.11
	SD	.656	.980	
	n	39	30	
Vocational agriculture should provide education for choice of an agricultural occupation through career motivation, career orientation, and career exploration.	M	5.282	5.133	.11
	SD	.759	.937	
	n	39	30	
Vocational agriculture should be developed and conducted using an advisory group consisting of individuals representing business and industry in the occupational area in which the program is being offered.	M	5.000	4.833	.11
	SD	.761	1.085	
	n	39	30	

Note. Concepts chosen for this table were those having at least a small effect size of .1 or greater. Means are based on extent of agreement with 1 representing strongly disagree and 6 representing strongly agree.

[1] Most = teachers judged as being the most effective.

[2] Least = teachers judged as being the least effective.

Table 1 continued.

Concepts		Teachers		r
		Most[1]	Least[2]	
Vocational agriculture should consider the competencies of the individual student when programs are established.	M	4.820	5.233	-.29
	SD	.914	.817	
	n	39	30	
Vocational agriculture should balance the quantity of programs with employment patterns at the local, state, and national levels -- in that order.	M	4.842	5.067	-.14
	SD	.945	1.015	
	n	38	30	
Vocational agriculture should focus on preparing individuals for work.	M	5.231	5.400	-.13
	SD	.842	.814	
	n	39	30	
Vocational agriculture should consider the needs of society when programs are established.	M	5.077	5.241	-.13
	SD	.774	.786	
	n	39	29	
Vocational agriculture should consider the interests of the individual student when programs are established.	M	5.103	5.267	-.13
	SD	.821	.785	
	n	39	30	
Vocational agriculture should provide individuals with the capacities to continue to learn and transfer their skills to meet the changing job requirements of the agricultural sector.	M	5.256	5.400	-.12
	SD	.677	.814	
	n	39	30	
Vocational agriculture should be available for individuals at the adult level.	M	5.103	5.233	-.10
	SD	.788	.953	
	n	39	30	

Note. Concepts chosen for this table were those having at least a small effect size of .1 or greater. Means are based on extent of agreement with 1 representing strongly disagree and 6 representing strongly agree.

[1] Most = teachers judged as being the most effective.

[2] Least = teachers judged as being the least effective.

Table 2
Percentages of Belief Categories Indicated By Teachers as Important To Program Quality.

		Teachers	
Belief categories by section		Most[1]	Least[2]
Development of affective skills is important (including leadership, social skills, citizenship training, positive work attitudes, and motivation)	%	46.1	3.3
FFA is important.	%	41.0	16.7
Teacher must be committed and competent (willing to work extra hours etc.).	%	38.5	6.7
Meeting student needs is important.	%	38.5	10.0
Practical out-of-school job experiences such as SOEP are important.	%	23.1	3.3
Hands on, applied experiences are important in learning.	%	23.1	10.0
Personal one-on-one contact with teacher is needed/SOE visits.	%	15.4	3.3
Students should have opportunities to participate in local, state and national activities.	%	10.3	0
Students attracted to the program should be interested and intelligent.	%	2.6	26.7
Program is valuable for all students.	% %	2.6 (2.6)	16.7 (3.3)
Updated curriculum materials are important.	%	0	10.0

Note. Percentages represent the number of teachers expressing a particular belief category divided by the number of teachers in the group. Percentages inside () indicate disagreement with the category.

[1] Most = teachers judged as being the most effective.

[2] Least = teachers judged as being the least effective.

Research Question Number 4

What is the relationship between teacher effectiveness and selected demographic variables?

A positive correlation coefficient was found between teacher effectiveness and each of the demographic variables. The highest correlation was with educational level (*r* = .45) with the most effective teacher group having more education than the least effective teacher group. Total years teaching experience had the next highest correlation coefficient (*r* = .26) followed by years in present position (*r* = .22) and age (*r* = .16). Educational level had a medium effect size and the other three variables had a small effect size. A higher percentage of the most effective teachers taught senior high only as compared to the least effective teachers (56.4% to 26.7%) while higher percentages of the least effective teachers taught junior and senior high respectively (25.6% to 40.0%), and junior high only (17.9% to 33.3%).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The analysis and interpretation of the findings in this study support the following conclusions.

1. The philosophy adopted by the Agricultural Education Division, AVA does not contain the beliefs most likely to distinguish between the most and least effective teachers.
2. The teachers participating in the study agreed with the philosophy and key concepts adopted by the profession.
3. There are beliefs not included in the philosophy adopted by the profession that do seem to distinquish between the most and least effective teachers.
4. The most effective teachers are more likely to express beliefs about the teacher being the key to effective programs while the least effective teachers are more likely to express beliefs about external factors being the key to effective programs.
5. Additional education is a better predictor of teacher effectiveness than either age, experience or agreement with any of the specific concepts adopted by the profession.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are made.

1. Research is needed to determine what other beliefs are held by vocational agriculture teachers and how those beliefs are related to teacher effectiveness.
2. Research is needed to determine if there are differences in the way most and least effective teachers implement their beliefs and whether those beliefs can be reliably discovered through actual observation.
3. Research is needed to determine what factors other than beliefs are related to teacher effectiveness.
4. The philosophy of the profession should emphasize that effective agricultural programs depend on the teacher taking personal

responsibility for and being committed to those programs.

5. Research is needed to determine how education contributes to teacher effectiveness and influences teacher beliefs.

6. Longitudinal research is needed to determine what beliefs students have just before entering teaching, whether those beliefs can be used to predict long-term success, and how those beliefs change over time.

Discussion

This research suggests that while teacher beliefs do have some impact on teacher effectiveness, much of the difference among teachers is caused by factors other than the beliefs investigated in this study. The philosophy adopted by the profession was accepted by all of the teachers regardless of whether they were identified as the most or least effective teachers and specific parts of that philosophy only explained small amounts of the variance between the most and least effective teachers. The beliefs that were the subject of many of the philosophical debates identified in the literature such as job specific training versus more generalized career preparation did emerge, but did not distinguish clearly between the most and least effective teachers. This does not mean that the beliefs of the profession are not important to effective teaching. The fact that all of the teachers seemed to agree with the philosophy indicates otherwise. It simply means that agreeing with the philosophy adopted by the profession is not sufficient in and of itself to ensure teacher effectiveness.

The study did indicate there are certain beliefs teachers hold that are related to teacher effectiveness. Since research has demonstrated that teachers educators can have a large impact on the philosophies and beliefs of students, it is important that teacher educators identify the beliefs that have a positive impact and make sure that those beliefs are systematically expounded and demonstrated throughout the teacher education program.

In addition, more research not only needs to be conducted on the beliefs that are actually controlling and motivating teacher actions, but also on the ability of those teachers to implement the beliefs they hold.

The relationship of additional education to more effective teaching was supported by this research, but the specifics of that relationship are still a mystery. Perhaps if teacher educators could discover exactly what beliefs and skills are essential to effective teaching, the relationship between educational level and teacher effectiveness would be much stronger.

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ATTITUDES OF OHIO VOCATIONAL AGRICULTURE TEACHERS TOWARD SUMMER PROGRAMS

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INTRODUCTION

Due to the seasonal nature of agriculture, many of the experiences needed by vocational agriculture students have occurred during the summer months. For this reason, the contract of the vocational agriculture teacher has been longer than the typical nine-month academic school year. Students gain experiences during the summer which could not be gained at other times of the year (Miller and Parks, 1981).

The taxonomy area of instruction in vocational agriculture dictates the nature of the experiences which are uniquely available in the summer. This has resulted in Ohio varying the required amount of extended service from one to twelve weeks depending upon the taxonomy area. Economic concerns in the school districts nurtured these distinctions. New Ohio standards were adopted in November 1982.

Numerous authors (Miller and Moss, 1980; Turner, 1974: Muncrief, 1976; Oades, 1979; Halcomb, 1974; and Lee, 1980) have espoused the desirability and necessity for a quality summer program in vocational agriculture. Newcomb (1978), Richardson (1982), and Combs and Todd (1974) pointed out that the quality of the summer program rested with the teacher. With the quality of the program resting on the teacher, then their attitudes are important. An attitude is a predisposition to behave in a certain manner (Kerlinger, 1973). Attitudes toward summer programs, then, would provide a window through which to view the potential behavior of teachers of vocational agriculture.

Binkley (1976), Williams (1981), Cepica (1977) and Hilton (1979) have reported the importance of the summer program to a quality vocational agriculture program. The determination of teachers attitudes toward this important component of the program was appropriate if quality programs were to be continued in Ohio. Luft (1976), Hendren (1976), and Lantis (1975) had ascertained appropriate summer activities which helped form the dimensions of the attitude domain.

Once attitudes were determined, they might be explained more fully by selected characteristics of the program or teachers. Appropriate characteristics were identified from the work of Lantis (1975), Arrington and McCracken (1981), Ford (1970), Robinson (1976), McMillion and Auville (1976), and Watkins (1983).

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The purpose of this study was to determine the attitudes of vocational agriculture instructors toward summer programs so that policy makers and administrators would know the opinions of those affected by the standards. If variability in attitudes existed within the group, then could it be explained by characteristics of the program or teacher?

PURPOSES AND OBJECTIVES

The objectives of this study were: 1) to determine the attitudes of Ohio vocational agriculture teachers toward summer programs, and 2) to determine any differences or relationships existing between these attitudes and (a) length of extended service, (b) taxonomy area, (c) years of experience teaching vocational agriculture, (d) educational level of the teachers, (e) additional summer employment other than teaching, and (f) teacher perceptions of the attitudes of their administrators toward summer programs.

PROCEDURES

This was descriptive survey research. The target population was 1983-84 Ohio vocational agriculture teachers (N = 730). A stratified, by taxonomy area, proportionate random sample (n = 190) was drawn (Cochran, 1977) to produce 95 percent confidence with a five percent margin of error; thus, sampling error was controlled. Frame and selection errors were controlled by utilizing an accurate, up-to-date list of teachers from which the random sample was drawn.

A researcher-developed questionnaire was utilized for data collection. Content validity was established by a panel of experts and internal consistency reliability was .82 with Cronbach's alpha procedure. Forty-five items comprised the instrument scaled with a four point Likert-type scale.

Two mailings were utilized with the second as a follow-up. An OSU pencil was used as an incentive. Non-response bias was controlled by comparing late to early respondents (Miller and Smith, 1983), and a t-test revealed no significant differences between respondents and non-respondents. The data sample was comprised of 158 (83%) respondents.

Data were described with frequencies, percentages, means and standard deviations. Analyses were conducted with correlations, t-tests, ANoVa, and LSD.

RESULTS

A study of this nature could benefit state and local supervisors of agricultural education by revealing teacher characteristics which are correlated with positive attitudes toward summer programs. This would enable supervisors to help teachers improve the effectiveness of their summer programs. In improving summer program effectiveness, vocational agriculture teachers stand to benefit in that they would have a better case for justifying the continuation of extended service contracts in the future.

TABLE 1
Mean, Standard Deviation, and Rank of Teachers' Responses by Statement

Statement	n	Mean	S.D.	Rank
21. A teacher should provide individualized instruction and supervision of student SOEP's during the summer.	155	3.62	0.60	1
30. A teacher should visit each prospective student during the summer to discuss the vocational agriculture program.	156	3.58	0.54	2
5. Technical inservice workshops like "Technical Update" or those provided by other teachers or the Cooperative Extension Service are worthwhile activities for a teacher to attend in the summer.	60	3.57	0.61	3
40. I would prefer not to have an extended service contract if given the choice.	155	3.57*	0.73	3
12. A teacher does not need any summer time to clean and organize the vocational agriculture classroom and laboratory.	60	3.56*	0.62	5
26. The teacher should attend and/or conduct county and state fair activities.	153	3.50	0.54	6
24. As a part of the summer program, the vocational agriculture teacher should visit with managers and employees of agriculturally-related businesses to develop good public relations.	156	3.47	0.51	7
22. The summer is a good time to contact employers of students for feedback on the needs of the students and the vocational agriculture program.	152	3.46	0.54	8
10. Vocational agriculture teachers should allot some summer time for maintaining laboratory facilities and equipment.	157	3.45	0.57	9
14. Teachers should work with FFA committees, particularly the executive committee, during the summer.	154	3.45	0.56	9

TABLE 1 (continued)

Statement	n	Mean	S.D.	Rank
6. Vocational agriculture teachers should attend at least one professional meeting such as the OVATA conference during the summer.	156	3.43	0.75	11
23. During the summer a teacher should help students plan and locate placement for their SOEP's.	154	3.33	0.57	12
15. Students have too many summer activities to conduct or attend FFA meetings or FFA activities during the summer.	153	3.31*	0.64	13
27. Part of the summer should be used to develop lesson plans and teaching aids such as specimen collections.	156	3.30	0.57	14
2. Some time should be used in the summer to meet with adult program participants on a one-to-one basis.	134	3.27	0.67	15
7. Few ideas for program improvement can be gained by visiting other vocational agriculture programs during the summer.	155	3.26*	0.87	16
13. A teacher can maintain an adequate inventory of supplies and equipment during the regular school year without spending any summer time for this.	157	3.17*	0.78	17
32. The summer is a good time to make necessary revisions to the curriculum and lesson plans.	157	3.17	0.60	17
8. Teachers should gain work experience in agriculturally-related fields during the summer to increase their expertise in those areas.	157	3.13	0.69	19
25. A teacher should meet with community service groups during the summer to obtain ideas for BOAC projects and make them aware of the vocational agriculture program and activities.	149	3.11	0.59	20
31. A teacher should schedule office hours during the summer to receive calls and complete required reports.	156	3.10	0.66	21

TABLE 1 (continued)

Statement	n	Mean	S.D.	Rank
29. The summer is a good time to order lesson materials such as filmstrips and books for the upcoming school year.	155	3.08	0.67	22
20. Teachers should conduct educational tours of agricultural industries, farms, greenhouses, etc. for students and/or adults during the summer.	156	3.05	0.72	23
41. If teachers are to conduct effective summer programs, the state should allow them more reimbursed mileage.	145	3.05	0.79	23
3. The vocational agriculture teacher is too busy to supervise the use of laboratory facilities by students and/or adults in the summer.	150	3.01*	0.88	25
11. Professional repair persons should be hired to repair laboratory facilities and equipment.	154	2.96	0.69	26
19. The summer is a good time for students to do BOAC projects.	140	2.96	0.69	26
33. During the summer, the teacher should assist in the job placement of program graduates.	148	2.94	0.65	28
35. Required reports like the "Summer Plan of Activities" or the Summary of Summer Activities" are useful to the school administration and the state.	150	2.94	0.78	28
17. Vocational agriculture teachers benefit from attending FFA Camp each summer.	131	2.91	0.77	30
39. If budgets require reductions in extended service, teachers in each of the taxonomies should have equal reductions.	150	2.90*	0.95	31
4. Vocational agriculture teachers should conduct education classes for students during the summer.	156	2.83	0.80	32
34. A teacher should meet with the advisory committee at least once in the summer.	149	2.77	0.71	33

TABLE 1 (continued)

Statement	n	Mean	S.D.	Rank
9. A teacher should be allowed to use some extended service time for earning a Master's Degree or other education.	157	2.73	0.96	34
37. Vocational agriculture teachers have had adequate training to be able to conduct an effective summer program.	148	2.68	0.69	35
18. Teachers benefit little from attending the Washington Leadership Conference Program more than once every three or four years.	83	2.65*	0.85	36
36. A summer visit by a state supervisor would be helpful to a teacher in conducting summer program activities.	145	2.56	0.78	37
1. A vocational agriculture teacher should conduct at least two educational adult programs during the summer.	130	2.55	0.82	38
38. Teachers in each taxonomy area need twelve weeks of extended service to conduct effective summer programs.	144	2.52	0.95	39
28. Evaluation of the curriculum and lesson plans is best accomplished during the regular school year.	153	2.43	0.78	40
16. School class time should be used to prepare the FFA Program of Activities.	153	2.13*	0.74	41
TOTALS		126.46	$\bar{x}$ = 3.09	

* Scale values were reversed for negatively stated items.

TABLE 2
Mean, Standard Deviation and Rank of Teachers' Responses by Statement of Perception of Administrator's Attitude

Statement	n	Mean	S.D.	Rank
44. The school administration feels that they are adequately informed of my summer program activities.	147	3.18	0.51	1
42. My school's administration is supportive of the vocational agriculture summer program activities.	156	3.11	0.80	2
45. My school administrators feel that I do not do enough "teaching" during the summer to merit a twelve month contract.	127	2.98*	0.81	3
43. If given a choice, my school's administration would prefer that vocational agriculture teachers do not receive extended service contracts.	138	2.88*	0.94	4
TOTALS		12.15	$\bar{x}$ = 3.02	

* Scale values were reversed for negatively stated items.

TABLE 3
Response Rate and Taxonomy Areas of Responding Teachers

Taxonomy Area	Number Mailed	Percent Returned	Respondents n	Respondents %
Production Agriculture	84	99	83	52.5
Animal Production and Care	5	80	4	2.5
Resource Conservation	6	83	5	3.2
Agricultural Supply, Business and Services	22	41	9	5.7
Agricultural Product Processing	3	100	3	1.9
Farm Business Planning and Analysis	9	89	8	5.1
Farm Management	3	67	2	1.3
Horticulture	29	72	21	13.3
Forestry	1	100	1	0.6
Agricultural Industrial Equipment and Services	26	71	20	12.7
Agricultural Environmental Protection	2	100	2	1.3
TOTALS	190		158	100

TABLE 4
Correlations Between Mean Scores and Selected Characteristics

Characteristics Mean Scores	Perceived Administrator Attitudes Toward Summer Programs	Number of Paid Weeks of Extended Service	Number of Years the Teacher Had Taught Vocational Agriculture	Number of Hours Worked per Week in an Additional Summer Job
Teacher Attitudes Toward Summer Programs	0.26	0.27*	0.03	-0.27*
Attitudes of Administrators Toward Summer Programs as Perceived by the Teachers	1.00	0.36*	0.10	-0.38*

* Significant at alpha level of .05

TABLE 5
Mean Totals and Ranks of Teacher Attitudes Toward Summer Programs by Taxonomy Area

Taxonomy Area	Mean	Rank
Farm Management	3.39	1
Production Agriculture	3.14	2
Horticulture	3.13	3
Agricultural Products Processing	3.12	4
Agricultural Environmental Protection	3.12	4
Farm Business Planning and Analysis	3.11	6
Resource Conservation	3.09	7
Agricultural Supply, Business, and Services	3.06	8
Forestry	3.00	9
Agricultural Industrial Equipment and Services	2.88	10
Animal Production and Care	2.88	10
TOTAL	3.09	

TABLE 6
Significant Differences in Teacher Attitudes Toward Summer Programs by Taxonomy Area

Taxonomy Area	Direction of Significance*	Comparative Taxonomy Area(s)
Agricultural Industrial Equipment and Services	lower than	Farm Business Planning and Analysis
		Horticulture
		Production Agriculture
		Farm Management
Animal Production and Care	lower than	Production Agriculture
		Farm Management

* $p < .05$, LSD

CONCLUSIONS

1) Ohio vocational agriculture teachers had positive attitudes toward summer programs. Administrators, supervisors and teacher educators should continue to encourage this outlook.

2) Ohio teachers perceived their local administrators had positive attitudes toward summer programs. The image they are conveying should be communicated to administrators.

3) A significant correlation was not found between teachers' attitudes and their perception of administrators' attitudes. One should not assume that teachers' perception of negative attitudes by administrators are a function of lowered teachers' attitudes.

4) Teachers had positive attitudes regardless of length of their contract. They perceive positively the activities listed and should be permitted to perform them, and provided time to do so.

5) Number of years taught. and other summer employment did not help predict attitudes. Attitudes were positive across groups. Lack of experience or other employment were not detrimental and statements to the contrary should not be forwarded.

6) Teachers in certain taxonomy areas had significantly lower attitudes than other areas. Policies and programs should seek to remediate this finding.

The results of Cepica (1977), Hilton (1979), and Williams (1981) regarding teachers' attitudes are supported by this study. Hilton (1979) related that teachers and administrators perceived summer activities as important and this study replicates this conclusion. The study contradicts Robinson (1976) who found a significant positive correlation between length of extended service contract and attitudes toward summer programs.

The results are generalizable to Ohio; but, to more fully describe teachers of vocational agriculture, it should be replicated in other states. A longitudinal, panel or cohort, study could determine any changes in attitude over time.

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DISCUSSION OF RESEARCH REPORTS ON
TEACHER PERSPECTIVES
NATIONAL AGRICULTURAL EDUCATION RESEARCH MEETING
ATLANTA, GEORGIA
DECEMBER 6, 1985

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It is indeed a pleasure to be able to serve as a discussant for this session of our national research meeting. The three research studies reported upon this morning have provided us with some interesting information which has potential value in helping to solve educational problems and to improve our educational programs.

At the outset, let me state that my remarks are based upon the research papers sent to me for review prior to the conference. I plan to indicate what I regard to be the strengths of the papers presented, raise questions, and make recommendations for improvement.

REPORT I: THE RELATIONSHIP BETWEEN JOB SATISFACTION AND TEACHER PERFORMANCE OF VOCATIONAL TEACHERS

BY

Thomas L. Grady and Michael F. Burnett

What relationships exist between teacher performance, as measured by performance ratings and student achievement, to job satisfaction of vocational agriculture teachers in Louisiana? This was the research problem identified by these researchers.

Strong Points

I compliment the researchers for their introduction to the paper which clearly states the problem based on a sound literature review and for their thoroughness in selecting the population and avoiding the threat of sampling error. The researchers are to be commended for their selection and justification for using the Minnesota Satisfaction Questionnaire to measure job satisfaction and the instrument used to assess the performance of the vocational agriculture teacher in terms of the principal's rating. Both instruments yielded high reliability coefficients for this study. The third instrument, which was developed by the researchers, assessed student knowledge of basic vocational agriculture subject matter which was covered in Vocational Agriculture I. Content validity was established by a panel of vocational agriculture teachers. Although the instrument was field-tested using Vocational Agriculture II classes, which resulted in a reliability coefficient of .72, the researchers calculated another reliability over the pretest data. The result was a reliability coefficient of .73. Again the researchers should be commended for their determination to control for measurement error.

Appropriate statistics were used in analyzing the data. The conclusions were based on empirical evidence and the recommendation section provides insight into future research studies in this area.

Questions and Suggestions for Improvement

Although I found the research to be well done, I do have a few concerns which I would like to address. I would encourage the researchers to state the objectives for the study more clearly. One of the main purposes of the study was to determine the relationship of teacher performance as measured by student achievement, yet the variable student achievement was not listed among the 4 objectives of the study.

The researchers reported that 45 out of 50 programs provided usable data. Justification was given however concerning why the remaining five programs were not included in the study. With such a small sample population is there some reason why more teachers were not involved in the study or were there only 50 teachers who taught Vocational Agriculture I at the time of the study? This was not made clear in the paper.

Since the Minnesota Satisfaction Questionnaire did not yield a significant difference between its first and second administration, what was to have occurred between the time of both administrations that would lead one to believe some type of change should occur? In other words, why was the MSQ given both as a pretest and a posttest?

On the student achievement assessment, the mean pretest and posttest scores on a scale of 100 points, were 36.80 and 48.46. Although there was a significant difference between pretest and posttest scores, can this data really tell us anything since the overall scores were very low? Why were these scores so low? Also due to these low scores, what conclusions can be drawn when it was found that there was no correlation between student gain scores on the achievement test and the form used by the principals to assess teacher performance?

What does it mean when the mean general job satisfaction score was 76.62? How satisfied am I with my job? Table 1 could be improved if it would respond to this question.

Although information about the teachers who participated in the study was not mentioned in the paper, it would be interesting to know if there is a relationship between years of teaching experience, job satisfaction, and teacher performance.

In summary, the researchers have brought to light some interesting informaton on the relationship between job satisfaction and teaching performance. They have certainly provided us with the opportunity to conduct additional research concerning other factors which may impact on job satisfaction and teacher performance.

REPORT II: PROFESSIONAL PHILOSOPHY, TEACHER BELIEFS AND TEACHER EFFECTIVENESS: IS THERE A RELATIONSHIP?

BY

Michael G. Rush and John R. Crunkilton

Is there a relationship between teacher effectiveness, teacher beliefs and philosophies, and selected demographic variables? This was the research problem identified by these researchers. The critique of this research will include points of commendation and questions to consider.

Strong Points

The researchers are to be commended for their brief review of related literature which adequately established the purpose of this study. I compliment the researchers for their efforts to obtain a high response rate. With the opportunity to win a personal computer, coupled with four additional follow-ups which included a postcard, a letter and an additional survey, a telephone call and several personal contacts, one should certainly hope for a high return.

Questions and Suggestions for Improvement

Although I found the research to be well done, I do have a number of questions and suggestions. While the researchers justifiably explain the sampling procedures, I feel compelled to ask what specific criteria was used to select the most and least effective vocational agriculture teachers? Was the set of criteria, mutually agreed upon by both state supervisors and teacher educators, supported by research on teacher effectiveness?

With a 94.5% response rate for the most effective and least effective teachers and only a 77% response rate for the entire population, were the four additional followups directed only at the most and the least effective teachers?

Since data was collected on the entire population of vocational agriculture teachers in the state of Virginia, what was done with the data collected on those teachers that were not categorized into the most effective or the least effective group?

In the explanation of the instruments used to collect the data, it would have helped the reader if the discussion progressed in the order in which the research questions were presented.

On part "b" of the instrument a 1 to 6 Likert-type scale, which was used to determine the relationship between teacher effectiveness and teacher agreement with each of the key concepts adopted by the Agricultural Education Division, AVA, was a reliability check made?

As a matter of clarification on the demographic variables, it would have helped this reader if the information had been placed in a table with specific breakdowns of educational level, years teaching experience, and years in present position.

Without really knowing what criteria was used to distinguish between a most and a least effective teacher, I find it very difficult to respond to the conclusions and recommendations of this study.

As a final question I would like to know which one of the vocational agriculture teachers involved in the study won the personal computer?

In summary, I agree 100% with the researchers that we must continue to research the area of teacher effectiveness and determine how we as teacher educators can best produce qualified, effective teachers.

REPORT III: ATTITUDES OF OHIO VOCATIONAL AGRICULTURE TEACHERS TOWARD SUMMER PROGRAMS

BY

Gary E. Short and Larry E. Miller

What are the attitudes of vocational agriculture teachers toward summer programs? This was the primary research problem identified by these researchers.

Strong Points

I compliment the researchers for a succinct introduction and review of literature that leads to the purpose of the study. They are also to be commended for their efforts to control for sampling error and frame and selection errors.

I wish to commend the researchers for describing the development of the questionnaire. A panel of experts was used to establish content validity and a Cronbach's Alpha reliability of .82 was also established on the instrument. It is clear that the researchers made every effort to control for measurement error.

The researchers are commended for their efforts in controlling nonresponse error. An OSU pencil was used as an incentive to return the questionnaire.

Questions and Suggestions for Improvement

Although I found the research to be generally well done, I do have a few concerns which I would like to express.

The review of literature and statement of the purpose for the study are clear and concise. However, I encourage the researchers to state the objectives for the study more clearly.

Although the researchers used a t-test to determine if there was a difference between late and early respondents and thus attempted to control for nonresponse bias, double-dipping the nonrespondents would have produced the most empirically sound procedure and would be preferred over the technique used (Miller and Smith, 1983).

Since this study involved descriptive survey research, the paper indicated that t-tests, ANOVA, and LSD were also employed. However, no explanation was given for their use nor was there a table describing the use of t-tests and ANOVA.

I recommend the acronyms ANOVA and LSD be used in the paper only after the words "Analysis of Variance" and "Least Significant Difference" have been used. This would help the novice reader more clearly understand the types of analyses which were conducted.

Although several of the tables were self-explanatory, I highly recommend that a comprehensive discussion of each table be provided. Without the researchers' analysis and interpretation of the tables, additional comments about the tables may be misleading.

It would be very helpful to the reader if a list of recommendations for further study accompanied the conclusions section. Concise and clearly stated conclusions would help to enhance the readability of the research report.

Miller, Larry E. and Smith, Keith L. "Handling Nonresponse Issues." Journal of Extension (September/October, 1983): pp. 45-49.

In summary, allow me to once again compliment the researchers. It was a pleasure to read their papers and I encourage them to continue their investigative efforts.

ASSESSMENT OF COMPETENCIES POSSESSED BY STUDENTS ENROLLED IN APPLIED PRINCIPLES OF AGRIBUSINESS AND NATURAL RESOURCES EDUCATION

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INTRODUCTION

Currently, a great deal of attention is being given to the concept of educational accountability. In this atmosphere, legislators, educators, and the general public are asking if expenditures for vocational education are producing desired results. Funding agencies, too, are asking for evaluative information upon which policy decisions are based. Effective evaluation is vital for improving educational programs since it makes it possible to determine the merits of existing programs, the need for new programs, or the need for revision of existing programs. However, based on a review of a report to the Governor of Florida, and similar reports in other states, it is obvious that sufficient data substantiating the effectiveness of vocational education is not available (Governor's Commission on Secondary Schools for the State of Florida, 1983).

One measure of the effectiveness of a curriculum is the performance of students. The assessment of student mastery of skills and knowledge may also be a measure of teacher effectiveness. Thus, tests provide an indication of how much is being learned in an instructional program and how well the objectives are being mastered. In order to properly use student tests as a measure of program effectiveness, a set of measurable objectives must be developed. These objectives should be based upon competencies that industry recognizes as necessary for employment. Consequently, one measure of program effectiveness is the extent to which students completing an instructional program possess or fail to possess the competencies specified in the instructional objectives. Therefore, test information cannot only be used to evaluate program effectiveness, but can also be used to evaluate the students' mastery of instructional objectives (Glasser and Nitko, 1971). Tests composed of items keyed to a set of specific measurable objectives are termed criterion-referenced tests (Ivens, 1970).

In order to have valid criterion-referenced tests of the competencies possessed by students enrolled in Applied Principles of Agribusiness and Natural Resources Occupations (hereafter referred to as Applied Principles) in Florida, Cheek and McGhee (1983, a, b, c, d, e, f) conducted a series of projects to develop such measures. As a result of their activities, test item banks were developed for the major content areas of the Applied Principles. Selected items from the banks relative to the Applied Principles program were used in the present study to assess student mastery of competencies. Applied Principles is designed to be taught at the tenth grade level for one hour of instruction per day for the entire school year. Students who enroll should have completed Fundamentals of Agribusiness and Natural Resources Occupations in the ninth grade.

PURPOSE

The purpose of this study was to assess the level of mastery of Florida students enrolled in the Applied Principles program. In order to achieve this purpose, the following objectives were developed as guidelines for conducting the research:

1. Determine the level of mastery of currently enrolled vocational agriculture students on the Applied Principles Achievement Test (APAT).

2. Compare students' level of mastery on the APAT according to the following:
   A. Current grade in school.
   B. Previous enrollment in agricultural classes.
   C. FFA membership.
   D. Involvement in the supervised occupational experience program.
   E. Career plans.

3. Determine whether competencies identified in the state curriculum guide for Applied Principles were being taught by the teachers.

RESEARCH PROCEDURE

The population for the study were schools in Florida where Applied Principles courses were taught during the 1982-83 school year. The five Department of Education regional consultants for agribusiness and natural resources education were contacted and asked to identify the schools in which Applied Principles was being taught and the names of the teachers teaching the course. This resulted in a list of 127 teachers who were offering Applied Principles. Each identified teacher was contacted to determine if they would be willing to administer the APAT to their students. Fifty-two teachers indicated that they would be willing to administer the test to their students and they identified 1587 students to whom the test might be administered.

Applied Principles consists of three instructional components, each designed to utilize one-third of the school year. All students complete the common core component which consists of agricultural business management, agricultural mechanics, and leadership and citizenship development; then, instructors select two specialized components from the following taxonomies: agricultural mechanics; agricultural production; agricultural resources; forestry; and ornamental horticulture. Because of this, 6 component tests of 20 questions each were constructed and various test combinations were administered depending upon the components an instructor taught.

Questions comprising the criterion-referenced test related to competencies identified in the State Curriculum Guide (Panhandle Area Education Cooperative and Florida Department of Education, 1980). Test questions were selected from test item banks developed by Cheek and McGhee (1983 a, b, c, d, e, f). Items were selected using the following criteria: an item discrimination index greater than 0.30 which indicates that the item can discriminate between students who do poorly on the test from those who obtain high scores and an item difficulty between .50 and .80. Item difficulty is a measure indicating the proportion of students who correctly answer an item.

The mean item discrimination for test questions included on each of the component tests were: Common Core .61; Agricultural Production .56; Ornamental Horticulture .52; Agricultural Mechanics .30; Forestry .51; and Agricultural Resources .49. The mean item difficulties for each component tests were: Common Core .65; Agricultural Production .61; Ornamental Horticulture .56; Agricultural Mechanics .38; Forestry .61; and Agricultural Resources .74.

Reliability of each item bank of questions was determined by calculating a Kuder-Richardson 20 correlation coefficient. The Kuder-Richardson 20 correlation coefficients for each of the components were as follows: Common Core .89; Agricultural Production .80; Ornamental Horticulture .89; Agricultural Mechanics .77; Forestry .88; and Agricultural Resources .94.

In addition to the test items designed to assess performance in Applied Principles, five additional items sought demographic information concerning the students. A teacher questionnaire was designed to determine whether or not each of the competencies identified in the State Curriculum Guide were included by teachers in their Applied Principles course.

Data for this study were collected from 44 teachers and 1039 students. To analyze data related to objective one, total mean scores were computed for each component of the APAT and the total test. Descriptive statistics were used to summarize each of the five demographic variables in objective two. One way analysis of variance was used for students' mean scores on the APAT when considering grade in school and career plans. The t-test was used in objective two to determine whether or not differences existed in students' mean scores on the APAT with respect to previous enrollment in agricultural classes, FFA membership, and involvement in supervised occupational experience programs. Descriptive statistics were used to analyze data in objective three.

RESULTS

Student Achievement

Data presented in Table 1 illustrates that students had the highest mean scores on the core component 12.35 (61.75%) followed by agricultural production 11.14 (55.7%), agricultural resources 10.06 (50.30%), ornamental horticulture 8.81 (44.05%), agricultural mechanics 8.25 (41.25%), and forestry 8.11 (40.55%). The common core component was composed of three sub-components: agricultural business management; agricultural mechanics; and citizenship and leadership. It was found that students performed best on the leadership and citizenship portion of the test and poorest on agricultural mechanics. In order to determine how students performed on the APAT, regardless of component, a total test score was derived. The mean total raw score was 31.37 (52.28%) with a standard deviation of 10.81 which indicates that two-thirds of the students had a mean score somewhere between 20.56 (34.27%) and 42.18 (70.03%).

Table 1
Achievement of Students on the APAT

Component	Mean Raw Score	Number of Questions	S.D.	N	Percentage Score
Core	12.35	20	4.08	1038	61.75
Agricultural Business Management	4.27	7	1.61	1038	61.00
Agricultural Mechanics	3.92	7	1.83	1038	56.00
Leadership and Citizenship	4.17	6	1.71	1038	69.50
Agricultural Production	11.14	20	4.10	823	55.70
Ornamental Horticulture	8.81	20	4.43	633	44.05
Agricultural Mechanics	8.25	20	3.22	380	41.25
Forestry	8.11	20	3.21	190	40.55
Agricultural Resources	10.06	20	3.36	34	50.30
Total Test	31.37	60	10.81	1039	52.28

Current Grade in School

Students completing the APAT were asked to indicate their current grade in school. Data indicated that the vast majority (66.3%) of the students were in the tenth grade, 19.2% were in the eleventh grade, 10.0% were in the twelfth grade, and 4.50% were in the ninth grade.

The total mean scores and standard deviations for the various grade in school categories of students taking the APAT are presented in Table 2. The scores ranged from a high of 34.05 for students in the 11th grade to a low of 25.76 for the 9th grade students. A one-way analysis of variance was computed to determine if there were significant differences in the mean scores of students on the APAT for the various grade levels, resulting in an F value of 7.28, which was significant at the .0001 level. Duncan's multiple range test was used to determine where significant differences lay. As indicated in Table 2, significant differences existed among mean score for ninth grade students and the mean scores of tenth, eleventh, and twelfth grade students. There were no significant differences among the mean scores of tenth, eleventh, and twelfth graders.

Table 2
Mean Score on APAT According to Grade in School .

Current Grade in School	Number	Mean Score*	Percentage Score	Standard Deviation
9th	41	25.76B	42.9	9.34
10th	604	32.08A	53.5	10.25
11th	175	34.05A	56.8	11.23
12th	91	33.14A	55.2	10.59

*Mean scores with the same letter are not significantly different at the .05 alpha level.

Previous Enrollment in Agriculture

In response to the question of whether they had been in an agricultural class prior to the current year, 77.5% of the students indicated that they had previously been in an agricultural class while 22.5% indicated that they had not been enrolled. The t-test was used to determine whether significant differences existed between the mean scores of these two groups on the APAT with the .05 level of significant difference between mean scores of students who had and students who had not previously been enrolled in an agricultural class. The t-test resulted in a t-value of 1.47 which was not significant at the .05 level. The mean score for previously enrolled students was 32.78 which was just slightly higher than the score of 31.55 for students who had not previously been in an agricultural class.

Membership in FFA

Almost three-fourths (74.5%) of the students completing the APAT indicated that they were members of their schools' FFA chapter, while 25.5% were not. To determine whether there were significant differences between mean scores on the APAT according to membership in FFA, the t-test with a .05 level of significance as the critical standard was used. The t-test resulted in a t-value of 3.93 which was significant at the .0001 level. Students who were FFA members scored significantly higher (33.42) than those who were not FFA members (30.32).

SOEP Involvement

Students were asked if they had a supervised occupational experience program (SOEP). Almost two-thirds (64.8%) of those responding indicated that they did have an SOEP while the other one-third (35.2%) did not. The t-test was used to determine if students with an SOE had significantly different mean scores on the APAT than students without an SOE. Data indicated that students with an SOE had significantly higher mean scores (33.48) than students who indicated that they did not have an SOEP (30.92). The t-test resulted in a t-value of 3.50 which was significant at the .0005 level.

Career Plans

Students were asked to indicate their post high school career plans. Data in Table 3 reveal that the students who planned to attend college or pursue other post-secondary education and students who were unsure of what their plans were, comprised the largest proportion (31.77 and 27.10%, respectively) of the respondents. Only 17.95% of the students indicated plans to enter an agricultural occupation directly from high school. The miliatry was indicated by 15.34% of the students as being in their future career plans. The smallest proportion (7.84%) of the students indicated that they planned to work in a non-agricultural occupation.

The total mean scores and standard deviations for the various categories of career plans of students completing the APAT are also presented in Table 3. The scores ranged from a high of 34.29 for students planning to attend college to a low of 28.61 for individuals planning to enter a non-agricultural occupation.

Table 3
Career Plans After Graduation and Mean APAT
Score According to Career Plans

Career Plans	Number	Percent	Mean Score*	S.D.
Agricultural Occupation	165	17.95	32.51AB	10.37
Non-Agricultural Occupation	72	7.84	28.61C	10.63
College/Post High School Education	292	31.77	34.29A	10.15
Military	141	15.34	30.35BC	11.37
Unsure	249	27.10	30.91BC	10.44

*Mean scores with the same letter are not significantly different at the .05 alpha level.

A one-way analysis of variance was computed to determine if there were significant differences among mean scores on the APAT by the five categories of career plans. The analysis of variance resulted in an F value of 6.99, which was significant at the .0001 level. Duncan's multiple range test was used to compare the mean scores for the five categories of career plans. The mean APAT score of students who planned to attend college or post-secondary school were significantly higher than the scores of students who were unsure of their career plans, or those who planned to enter the military, or those who planned to enter a non-agricultural occupation. In addition, those who planned to enter a non-agricultural occupation scored significantly lower than students planning to enter an agricultural occupation or attend college or post-secondary school.

Competencies Taught

The third objective was designed to determine whether or not the competencies identified in the Applied Principles Curriculum Guide were actually being taught by teachers participating in this study. Only teachers teaching a specific curriculum component were asked to respond to the competencies related to that component. Thus, each teacher responded to the common core component and two specialized components.

Data in Table 4 identify the degree to which the 140 competencies included in the Curriculum Guide were being taught by the teacher respondents in this study. The data revealed that 65 (46.5%) of the competencies were taught by 75 - 100 percent of the teachers who taught a specific program area. Fifty-one competencies (36.4%) were taught by 50 - 74.9% of the teachers. Nineteen competencies (13.5%) were included in the program of 25 - 49.9% of the teachers and five (3.6%) of the competencies were taught by 0 - 24.9% of the teacher respondents.

Table 4
Degree to Which Applied Principles
Competencies are Being Taught by Teachers

Percent of Teachers Teaching the Competency	Number of Competencies	Percent of Competencies
0 - 24.9	5	3.6
25 - 49.9	19	13.5
50 - 74.9	51	36.4
75 - 100	65	46.5
Total	140	100.0

Data were also examined to determine the degree to which the competencies identified in the State Curriculum Guide were being taught by 75% or more of the teachers. Data in Table 5 reveals that 75 to 100 percent of the teachers taught 48.2 percent of the core competencies, 35.3 percent of the agricultural mechanics competencies, 75 percent of the ornamental horticulture competencies, 52.4 percent of the forestry competencies, 25 percent of the agricultural production competencies, and 58.3 percent of the agricultural resources competencies. A common core sub-component of leadership had the highest proportion (78.3%) of the competencies being taught by 75% or more of the teachers.

Table 5
Percentage of Competencies by Instructional Component
Identified by 75% or More of Teachers as Being Included
in the Applied Principles Program

Component	Total Number of Competencies	Number of Competencies Identified by 75% or more of the Teachers	Percent
Core	54	26	48.2
Agricultural Business Management	14	2	14.3
Agricultural Mechanics	17	6	35.3
Leadership	23	18	78.3
Agricultural Mechanics	17	6	35.3
Ornamental Horticulture	12	9	75.0
Forestry	21	11	52.4
Agricultural Production	24	6	25.0
Agricultural Resources	12	7	58.3
Total	140	65	46.4

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CONCLUSIONS

The following conclusions were drawn from the findings of this study:

1. Based upon the performance of students on the APAT, student mastery of the Applied Principles curriculum was slightly over 52%. This indicates that the average student had learned approximately 52% of the curriculum as prescribed by the Curriculum Guide. Additionally, it was concluded that less than 50% of the competencies specified in the Curriculum Guide were being taught by teachers.

2. Students in the tenth, eleventh, and twelfth grade scored significantly higher on the APAT that did ninth graders.

3. There was no significant difference between mean score on the APAT for those students who were previously enrolled in an agricultural class and those who were not.

4. Students taking the APAT who were currently members of the FFA scored significantly higher on the APAT than students who were not in FFA. In addition, those involved in SOE scored significantly higher on the APAT than those who indicated no involvement with SOE.

5. Students who planned to attend college or post-secondary school scored significantly higher on the APAT than students who were unsure of their career plans, or those who planned to enter the military, or those who planned to enter a non-agricultural occupation. There was not a significant difference between students who planned to enter an agricultural occupation and those with plans for post-secondary school education. In addition, those students planning to enter an agricultural occupation scored significantly higher than those students planning to enter a non-agricultural occupation.

RECOMMENDATIONS

Based upon the findings and conclusions of this study, the following recommendations are made:

1. This study indicates that less than 50% of the competencies specified in the Applied Principles Curriculum Guide were being taught by 75% or more of the teachers and the percentage test score on the APAT was approximately 52%. These data raise several questions such as: Are teachers teaching what should be taught? Are students learning what they should learn? Does the State Curriculum Guide reflect what should be taught? If the Curriculum Guide does reflect what should be taught, why are teachers not teaching the competencies specified? Further study should be conducted to determine answers to these questions.

2. Emphasis should be given to strengthen instruction in Applied Principles. Strategies for strengthening this program might

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include but is not limited to: (1) a review of the Applied Principles Curriculum Guide by teachers, advisory committee members, regional consultants, vocational directors, teacher educators, and others to make certain that the competencies contained therein are appropriate; (2) inservice educational activities designed to improve the competencies of teachers related to the instructional components of Applied Principles; (3) special attention by Department of Education regional consultants for vocational agriculture during the program review process to note deficiencies related to competencies not included in the instructional program; (4) increase attention at the pre-service level to emphasize the structure of Applied Principles and the competencies to be taught; (5) and the development of instructional materials to assist teachers in teaching the competencies included in the Curriculum Guide. In addition, an effort should be made to determine if appropriate facilities and equipment are available to teach the competencies specified in the Curriculum Guide.

3. Teachers of agriculture who teach Applied Principles should encourage all students to be members of the FFA chapter and to become actively involved with appropriate supervised occupational experiences. This recommendation is made because of the significantly higher mean scores on the APAT by students who were FFA members and who also indicated involvement with supervised occupational experiences.

4. A study should be designed to assess students' level of mastery of the competencies that teachers indicate they are including in the Applied Principles program.

5. Other researchers should conduct similar research in other states to provide empirical evidence which further describes the outcomes of vocational agriculture programs.

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CROP PRODUCTION SKILLS POSSESSED AND TAUGHT BY VOCATIONAL AGRICULTURE TEACHERS IN ILLINOIS

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INTRODUCTION

The importance of vocational agriculture teachers having the ability to perform technical skills has been widely recognized. "A mark of quality (vocational agriculture) programs is the level of professional and technical competence possessed by those entering the profession" (Warmbrod, 1978, p. 269). According to McCracken (1981), teachers must possess a degree of mastery of the subject matter which they teach. "This mastery must encompass both the knowledge and skill of the discipline. Teachers who can interpret and apply basic principles and demonstrate practical skills needed by students will bring credibility to themselves and their profession" (McCracken, 1981, p. 119). Osborne (1982) found that teachers who reported higher livestock skill performance levels had a very strong tendency to report higher levels of confidence in their ability to demonstrate the skills in a teaching setting. In addition, teachers with firsthand experience with the skills tended to teach the skills more often and use teaching methods involving demonstrations and student practice. In a companion area, crop production, one might expect the same linkages between performance levels and teaching practices.

Illinois is a strong agricultural state that is heavily involved in field crop production (Illinois Statistics, 1983). Although several studies have sought to identify essential skills in crop production (Yoder and McCracken, 1975; Leske, 1979; Byrd, Yoder, and McCracken, 1975; Abel, 1966; McClay, 1978), no recent research was found that examined the crop production skill performance levels of practicing vocational agriculture teachers. Thus, the ability of Illinois agricultural production teachers to perform and teach technical skills in crop production was in question and became the focus of the study.

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the crop production skills possessed by Illinois agricultural production teachers and to examine the extent to which crop production skills were taught in high school vocational agriculture classes. Specific research questions included:

1. What were the self-reported performance levels of Illinois agricultural production teachers with respect to crop production skills?

2. How confident were teachers in their ability to perform and demonstrate these skills?

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3. To what extent were these skills taught during the past school year, and what teaching methods were reportedly used?

4. What was the relationship between performance level and (a) confidence level, (b) teaching method used, and (c) demographic characteristics?

PROCEDURES

The research design implemented in the study was classified as descriptive correlational. The target population included all Illinois agricultural production teachers in 1984-85 (N = 370). The 1984-85 Illinois Agriculture Teachers Directory served as the frame for this population.

The essential skills needed in crop production were identified through two processes, including literature review and interviews with two faculty members in the College of Agriculture at the University of Illinois. The list of skills generated was restricted to manipulative skills required in crop production. A total of 112 skills was included in the survey (see Appendix A), and the skills were grouped into those pertaining to implements (11), tractors (34), equipment adjustment (21), equipment operation (26), and general crop production (20).

Data were collected from teachers through the use of a mailed questionnaire. The instrument was field tested for clarity, and reliability was examined using pilot test data. Reliability assessment included tests for both internal consistency (r = .98) and stability of responses (r = .98).

The instrument was distributed to respondents through the initial mailing in May 1985, which contained the instrument and a cover letter, a postcard follow-up reminder, and two additional follow-up letters containing replacement questionnaires. The instrument was compiled in booklet fashion and mailed to a random sample of 100 teachers (27 percent of the population). A total of 81 questionnaires were returned. However, two of the returned surveys were incomplete and were not included in the data analysis. Thus, the data sample consisted of 79 percent of the sample. A 20 percent follow-up random sample of nonrespondents was performed. Visual comparison of demographic and other data revealed no apparent differences in the responding and nonresponding groups, thus allowing for generalization of the results to the target population under study. Descriptive statistics were used to summarize and analyze the data. Possible relationships between variables were examined using Pearson correlation coefficients.

RESULTS

Characteristics of Teachers

The number of years of agricultural teaching experience reported by the group of teachers ranged from one to 36. However, just over one-half of the teachers had taught less than 10 years, including their current year. The average teacher in the study had taught about 12½ years. Over one-half (58 percent) of the teachers indicated that they supervised crop production on land owned or rented by the school. The number of acres supervised ranged from one to 252 with $\bar{x}$ = 19.3 acres (SD = 37.52). Nearly 90 percent of the responding teachers were reared on a farm where field crops were grown. An average of 343 acres were contained in these farms, with only four respondents reporting a farm size of less than 100 acres. Fifty percent of the teachers in the sample regularly worked on a farm where field crops were grown. Nearly two-thirds of these farms were between 100 and 500 acres.

Sixty-six percent of the respondents had completed four years of high school vocational agriculture ($\bar{x}$ = 3.03 years) while only 15 percent had no vo-ag in high school. All teachers in the sample were fully certified to teach vo-ag and all were male. Nearly 80 percent of the undergraduate degrees were granted in agricultural education. Teachers earned their undergraduate degrees from the following universities: University of Illinois, 40.3 percent; Illinois State University, 22.2 percent; Southern Illinois University, 20.8 percent; Western Illinois University, 2.8 percent, and out of state universities, 13.9 percent. Fifty-four percent of the respondents held a bachelor's degree, while 36.5 percent held a master's degree.

Crop Production Skills Performance Levels

Teachers reported their performance level for each skill based upon the following scale, which was assumed to be interval: (1) no knowledge, (2) read about, (3) seen performed, (4) performed myself, and (5) possess mastery. The resulting mean performance levels were interpreted using the following scale:

1.00 - 1.49 = No Knowledge
1.50 - 2.49 = Read About
2.50 - 3.49 = Seen Performed
3.50 - 4.49 = Performed Myself
4.50 - 5.00 = Possess Mastery

None of the 112 mean performance levels were in the "no knowledge" area, and only one (refuel engines) was in the "possess mastery" range of the performance continuum (see Table 1). However, over three-fourths (77.7 percent) of the mean performance levels fell into the "performed myself" range. The mean performance levels were found to be very consistent across all five crop production skill areas. Nearly all of the 112 mean performance levels fell into the "seen performed" or "performed myself" ranges.

The highest mean performance level was found for the set of 34 tractor skills and the lowest for the set of 20 general crop production skills (see Table 2). However, the mean performance levels for all skill areas were calculated to be in the "performed myself" range. The findings in Tables 1 and 2 indicate that, on the average, teachers had actually performed firsthand a large majority of the 112 skills essential to field crop production.

Table 1

Frequency and Percentage of Mean Crop Production Skill Performance Levels By Skill Area

	Performance Level									
	No Knowledge		Read About		Seen Performed		Performed Myself		Possess Mastery	
Skill Area	f	%	f	%	f	%	f	%	f	%
1. Implements	0	0	0	0	2	18.2	9	81.8	0	0
2. Tractors	0	0	0	0	2	5.9	31	91.2	1	2.9
3. Adjustment	0	0	1	4.8	6	28.6	14	66.6	0	0
4. Operation	0	0	1	3.8	5	19.3	20	76.9	0	0
5. General	0	0	1	5.0	6	30.0	13	65.0	0	0
6. Overall	0	0	3	2.7	21	18.7	87	77.7	1	.9

Table 2

Mean Crop Production Skill Performance Levels of Teachers

Skill Area	$\bar{x}$	SD
1. Implements	3.753	.650
2. Tractors	4.088	.558
3. Adjustment	3.742	.594
4. Operation	3.805	.568
5. General	3.710	.502
6. All Mechanics (#1 - #4)	3.876	.525
7. Overall	3.842	.507

Crop Production Skills Confidence Levels

For each of the 112 skills teachers also reported their level of confidence in their ability to demonstrate the skill. The scale ranged from (1) very low to (5) very high. The mean confidence levels were interpreted in a fashion similar to the mean performance levels.

None of the 112 mean confidence levels were in the very low or very high range (see Table 3). One-fourth of the mean confidence levels were in the medium range, while nearly three-fourths (71.4 percent) were in the high confidence level range. Little variation in mean confidence levels was evident from one skill area to another. Overall, nearly all confidence levels were self-reported as medium or high.

The highest mean confidence level was found for the set of 34 tractor skills and the lowest for the set of 20 general crop production skills (see Table 4). However, the mean confidence levels for all skill areas were found to be in the high range. Data summarized in Tables 3 and 4 indicate that teachers reported high levels of confidence in their ability to demonstrate the 112 essential crop production skills.

Teaching Methods Used

For each of the 112 crop production skills teachers were also asked to report their major teaching method, if the skill was taught during the past year. Results are shown in Table 5.

Data in Table 5 reveal a fairly consistent pattern of use of teaching methods among the five crop production skill areas. On the average, teachers spent more instructional time with the 20 general crop production skills and also provided more student practice than in the other skill areas. For the set of 112 crop production skills an average of nearly 30 percent of the teachers reported they did not teach the skill. Furthermore, over one-third of the teachers used classroom discussion only as their primary teaching method. On the average, three-fourths (74.6 percent)

Table 3

Frequency and Percentage of Mean Crop Production Confidence Levels By Skill Area

Skill Area	Very Low f	Very Low %	Low f	Low %	Medium f	Medium %	High f	High %	Very High f	Very High %
1. Implements	0	0	0	0	4	36.4	7	63.6	0	0
2. Tractors	0	0	0	0	3	8.8	31	91.2	0	0
3. Adjustment	0	0	1	4.8	7	33.3	13	61.9	0	0
4. Operation	0	0	1	3.8	8	30.8	17	65.4	0	0
5. General	0	0	1	5.0	7	35.0	12	60.0	0	0
6. Overall	0	0	3	2.7	29	25.9	80	71.4	0	0

Table 4

Mean Crop Production Skill Confidence Levels of Teachers

Skill Area	$\bar{x}$	SD
1. Implements	3.627	.802
2. Tractors	4.019	.656
3. Adjustment	3.686	.735
4. Operation	3.696	.728
5. General	3.620	.620
6. All Mechanics (#1 - #4)	3.803	.640
7. Overall	3.767	.612

Table 5

Average Frequency of Teaching Method Used By Skill Area

	Teaching Method				
Skill Area	Did Not Teach %	Classroom Discussion %	Field Observ. %	Teacher Demon. %	Student Practice %
1. Implements (11)	22.3	43.4	14.7	6.2	13.4
2. Tractors (34)	28.7	30.5	3.2	7.0	30.6
3. Adjustment (21)	39.6	32.1	11.0	3.6	13.0
4. Operation (26)	29.5	40.8	14.5	2.6	12.6
5. General (20)	18.3	40.6	11.6	4.7	24.9
6. All Mechanics (92)	30.6	35.3	9.6	4.9	19.4
7. Overall (112)	28.4	36.3	9.9	4.8	20.4

of the teachers did not teach the skill or used discussion or observation methods (secondhand) as their instructional approach. Overall, an average of one-fourth (25.2 percent) of the teachers used firsthand methods of demonstration or student practice to teach the skill.

Relationship of Performance Level to Confidence Level and Demographic Factors

For all crop production skill areas teachers who reported higher performance levels had a very strong tendency ($r = .79$) to report higher levels of confidence in their ability to demonstrate the skill (see Table 6). Furthermore, teachers who had performed the skill or possessed

Table 6

Pearson Correlation of Crop Production Skills Performance Levels by Factors Possessed by Teachers

Factor	r
1. confidence level	.79***
2. current crop farm work or ownership	.38***
3. acres in crop farm where reared	.29**
4. teaching method used	.25*
5. reared on a crop farm	.22
6. years of high school vo-ag	.20
7. acres in school farm supervised by teacher	.17
8. years of teaching experience	-.15
9. supervision of school crop farm	-.14
10. acres in crop farm currently owned or worked	.13

* $p < .05$
** $p < .01$
*** $p < .001$

mastery tended to report the use of teaching methods involving demonstrations and student practice. Teachers who reported higher performance levels also tended to be currently involved in farm work or ownership (r= .38) and tended to have been reared on farms with more acres devoted to crop production (r = .29). Statistically non-significant low or negligible relationships were found between performance level and the remaining demographic variables (refer to Table 6).

CONCLUSIONS AND RECOMMENDATIONS

Based upon the results of this study, the following conclusions and recommendations for practice were developed:

1. Illinois agricultural production teachers possess high crop production skill performance and confidence levels. The average teacher has actually performed most of the essential skills and is confident in his/her ability to demonstrate the skill to others.

2. Although performance and confidence levels are high, a large majority of teachers either do not teach crop production skills, or they "teach about" the skill through classroom discussion and field observation. The relationship between performance level and teaching method is low. Teachers need to be encouraged to take their teaching to the doing level. Assistance in planning and providing skill demonstrations and student practice should be offered to teachers through workshops, courses, and other inservice activities.

3. Crop production skill performance levels are enhanced by active personal involvement in field crop production. Teachers should be supported in their farming ventures, which allow them to keep in touch with technical agriculture and refine their skills.

4. Performance level is strongly related to one's confidence in performing and demonstrating skills. Since other research has shown that confidence in teaching is an important quality that permeates all teacher behaviors, technical skill performance levels should continue to be monitored and maintained at high levels.

5. A large number of Illinois agricultural production teachers supervise school farms where field crops are grown, yet demonstrations and student practice of skills are provided a relatively small amount of the time. Teachers should develop strategies for taking better advantage of the opportunities these school farms provide for teaching crop production skills to students.

6. Since performance level is unrelated to whether or not a teacher supervises a school farm or land lab, teachers apparently do not use this highly accessible resource for upgrading and refining their own skills.

7. Most Illinois agricultural production teachers are reared on crop farms. Those reared on larger farms can be expected to have somewhat higher performance levels. However, crop production skill performance levels are not significantly improved as one accumulates more teaching experience.

8. The list of crop production skills validated in this study should be used as an entry and exit checklist for those preparing to teach. Current teachers should also refer to this list as they seek to upgrade and improve their manipulative skills in crop production.

The following recommendations for further research were forwarded:

1. Crop production skill performance levels of high school students should be examined to determine their skill levels and source of skill development.

2. Performance levels of prospective teachers enrolled in university teacher preparation programs should be monitored throughout the program.

3. Teachers' activities and involvement with school farms should be examined.

4. Teachers should be surveyed to identify reasons for not providing more demonstrations and student practice when they teach crop production skills.

5. An experimental study should be undertaken to determine the effects of involvement in crop skill instruction during student teaching on skill instruction practices later as a full time teacher.

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APPENDIX A

Implements

1. calibrate sprayers
2. maintain sprayers
3. calibrate granular applicators
4. maintain granular applicators
5. calibrate & adjust grain drill
6. calibrate row planters
7. adjust row planters
8. service & maintain planters
9. service & maint.tillage equip.
10. service & maint.harvest equip.
11. prepare equip. for storage

Tractors

1. connect hydraulic systems
2. connect 3 pt. hitch
3. connect front end operated equipment
4. hitch towed equipment
5. add wheel weights
6. refuel engines
7. replace & adjust safety devices
8. operate engine test equipment
9. perform regular maintenance
10. operate tractors
11. replace engine coolant
12. service battery
13. replace alternator/gen.
14. replace starter
15. replace voltage regulator
16. adjust carburetors
17. bleed diesel fuel systems
18. lubricate
19. adjust engine timing
20. replace diesel fuel nozzles
21. replace plugs, points, & condenser
22. change transmission fluid
23. change crankcase oil & filter
24. change hydraulic fluid
25. replace radiator hoses & belts
26. replace thermostats
27. repack bearings
28. replace bearings & seals
29. replace starter solenoid
30. service tires
31. replace fuses
32. replace lights
33. perform daily service & maintenance check
34. prepare for storage

Adjusting Equipment

1. moldboard plow
2. chisel plow
3. paraplow
4. subsoiler
5. disk
6. harrow
7. rotary hoe
8. field cultivator
9. row crop cultivator
10. cultipacker
11. combine (corn)
12. combine (beans)
13. combine (wheat)
14. ear corn picker
15. mower
16. rake
17. mower/conditioner
18. hay conditioner
19. baler
20. forage chopper
21. forage blower

Operating Equipment

1. moldboard plow
2. chisel plow
3. paraplow
4. subsoiler
5. disk
6. harrow
7. rotary hoe
8. field cultivator
9. row crop cultivator
10. cultipacker
11. combine (corn)
12. combine (beans)
13. combine (wheat)

14. ear corn picker
15. mower
16. rake
17. mower/conditioner
18. conditioner
19. baler
20. forage chopper
21. forage blower
22. sprayer
23. granular applicator
24. grain drill
25. broadcast spreader
26. row planter

General Crop Production

1. prepare seedbeds
2. apply fertilizer (liquid)
3. apply fertilizer (dry)
4. mix fertilizer solutions
5. transfer NH_3 from nurse tank
6. transfer liquid nitrogen from nurse tank
7. apply herbicides
8. mix pesticides
9. determine plant populations
10. sample soils
11. sample crops for tissue test
12. scout crops
13. perform herbicide bio-assay
14. inoculate legume seed
15. clean/handle seed
16. condition grain
17. grade grain
18. estimate soil losses
19. determine slope
20. use soil conservation practices

VOCATIONAL AGRICULTURE COMPETENCIES AND SEX-EQUITY IN OREGON

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VOCATIONAL AGRICULTURE COMPETENCIES AND SEX-EQUITY IN OREGON

INTRODUCTION

Teachers play a tremendous socializing role in American culture and they are a key to changing student concepts regarding sex role expectations (Kaplan, 1975; Matthews and McCune, 1975). Because teachers can be such a vital force in changing student concepts, a real danger exists of teachers actually increasing and/or perpetuating the stereotypic attitudes of students (Henderson & Knight, 1980).

PURPOSE OF THE STUDY

The purpose of this study was to determine if differences existed between male and female self-perceived vocational agriculture competency level attainment. Further, it was to determine if instructors perceive their male and female students' technical agriculture competency level differently.

OBJECTIVES OF THE STUDY

The objectives of this study were therefore to:

1. Determine if differences in self-perceived competency level attainment exist between male and female students in the junior level Ag III classes of vocational agriculture programs in Oregon.
2. Determine if differences in agricultural competency level attainment exist for male and female students as perceived by their vocational agriculture instructors in Oregon.
3. Determine if male and female students perceive their agricultural competency attainment differently than do their vocational agriculture instructors.

PROCEDURES

A stratified random sample was drawn using two vocational agriculture programs from each Oregon FFA district. The vocational agriculture instructor and all junior level (Ag III) students were included in the study for each program that was thus drawn.

A "Panel of Experts" consisting of three Teacher Educators, a State Specialist in Vocational Agriculture Education, and a State Sex-Equity Specialist established content validity of the instruments for both students and teachers. The instrument for students consisted of an instruction page, fifty-three agricultural competencies (McClay, U.S. Government Printing Office, 1978) and demographic information. The instructor's instrument included expanded instructions for both themselves and their students, the same competency listing as was in the student's instrument, but with double five-point scales to offer separate assessments for males and females.

The responses to the instruments were analyzed statistically using the separate and paired t-Test procedure. Frequency counts and percentages were used to treat the demographic data.

The response rate for those schools participating in the study was, seventeen (17) of the twenty (20) study schools returned usable materials. This comprised an eighty-five percent (85%) response rate. The three non-respondents were called; it was found that one did not have a junior class that term and the other two had only three students between them.

Approximately 21 percent of the students enrolled in vocational agriculture programs at the Junior level in this study were female, while 12 percent of the vocational agriculture instructors in the study were female.

FINDINGS AND DISCUSSION

Information presented on Table one summarizes the demographic data asked of student respondents. This information is presented in frequency count and percentage responses by category.

Approximately 60 percent of both male and female students lived on farms having both livestock and crops. Approximately 70 percent of both male and female students in vocational agriculture planned to work in agriculture after graduation from high school.

The self-assessed "strongest areas" for the male students in vocational agriculture were Animal Science and Agricultural Mechanics whereas female students reported their "strongest areas" to be Leadership and Animal Science. The "weakest areas" in agriculture for male vocational agriculture students appeared to be Forestry and Leadership whereas female vocational agriculture students reported their "weakest areas" to be in Agricultural Mechanics and Plant Science.

Table 1: Demographic Data
Requested of Student Respondents
(Number of Responses/Percentage of Responses)

			MALE	FEMALE
1)	Sex of Respondent:		143/79%	37/21%
2)	Do you live on a farm?	Yes	90/63%	21/57%
		No	53/37%	16/43%

(Note: percentage is expressed as % of male population or % of female population through the remainder of the demographic data).

3)	If "Yes", what type?	Crops	46/37%	11/34%
		Livestock	69/56%	19/59%
		Dairy	8/7%	2/6%

(Note: multiple markings were possible in this category).

4)	If "Yes", how large?	under 20 acres	29/32%	4/19%
		20 to 50 acres	21/23%	8/38%
		50 to 100 acres	9/10%	1/4%
		over 100 acres	31/34%	8/38%
5)	Do you plan to work in agriculture after high school graduation?	Yes	98/69%	27/73%
		No	45/31%	10/27%
6)	If "Yes", what area?	Production	44/45%	6/22%
		Business	13/13%	9/33%
		Mechanics	22/23%	0/0%
		Forestry	6/6%	1/4%
		Education	2/2%	4/15%
		Research	0/0%	2/7%
		Other	11/11%	5/19%
7)	Strongest area in Vo-Ag?	Leadership	24/17%	16/43%
		SOEP	21/15%	4/11%
		Plant Science	5/3%	5/14%
		Soil Science	3/2%	0/0%
		Animal Science	36/25%	12/32%
		Ag Mechanics	48/34%	0/0%
		Forestry	6/4%	0/0%
8)	Weakest area in Vo-Ag?	Leadership	24/17%	2/5%
		SOEP	11/8%	1/3%
		Plant Science	30/21%	7/19%
		Soil Science	33/23%	2/5%
		Animal Science	1/1%	2/5%
		Ag Mechanics	9/6%	19/52%
		Forestry	35/24%	4/11%

Objectives Number One and Two Combined

Table two presents data which identifies the mean scores that Ag III (junior level) males and females perceive for themselves by competency along with standard deviations and separate t-Test results. Table two also presents instructor perceptions of male and female student competency with standard deviations and paired t-Test results.

The taxonomies investigated were Leadership, SOEP and Agricultural Business, Plant Science, Soil Science, Animal Science, and Agricultural Mechanics.

Female students rated one Leadership and one Animal Science competency significantly higher than male students. Male students rated one Plant Science and 16 Agricultural Mechanics competencies significantly higher than female students. In addition, male students rated their competency level one to two points higher than did female students on the five point graduated schale provided in the Agricultural Mechanics taxonomy.

Instructors rated female students significantly higher than male students on two Animal Science competencies. Instructors rated male students significantly highre than female students on eight Agricultural Mechanics competencies.

Table 2: Male and Female Student Self-Assessment
and Instructor Assessment of Male and Female Student Competencies in Vocational Agriculture

	Student Self-Perception Ratings						Instructor's Perception Students' Competency					
	MALE		FEMALE		SEPARATE		FEMALE		MALE		PAIRED	
COMPETENCY	$\bar{X}$	SD	$\bar{X}$	SD	t-VALUE	P	$\bar{X}$	SD	$\bar{X}$	SD	t-VALUE	P
Leadership												
1. Serve on a Committee	3.28	1.19	3.84	1.21	-2.50	0.15	4.19	0.75	3.87	0.96	1.23	0.24
2. Lead a Discussion	3.12	1.22	3.54	1.24	-1.85	0.07	3.69	0.95	3.94	0.77	-1.07	0.30
3. Deliver a 3-8 Minute Speech to the Class	3.20	1.24	3.51	1.12	-1.47	0.15	3.56	1.03	3.69	0.87	-0.62	0.54
4. Follow Rules When Introducing Others	3.32	1.01	3.78	0.96	-2.54	0.01*	3.47	0.91	3.27	0.59	1.15	0.27
5. Plan an FFA Activity	3.13	1.29	3.62	1.50	-1.85	0.07	4.40	0.51	4.13	0.74	1.47	0.16
6. Use Basic Parliamentary Procedure in Conducting Meetings	3.27	1.27	3.59	1.34	-1.33	0.19	4.06	1.00	4.06	0.93	0.00	1.00
SOEP & Agricultural Business												
7. Keep a Financial Record	3.32	1.21	3.54	1.26	-0.97	0.34	3.62	0.72	3.25	0.58	2.09	0.05
8. Select an Agricultural Occupation	3.74	1.19	3.70	1.27	0.17	0.87	4.27	0.46	4.07	0.59	1.87	0.08
9. Develop an SOEP Which Leads to Agricultural Occupation	3.27	1.30	3.25	1.32	0.09	0.93	4.06	0.77	3.81	0.83	1.73	0.10
Plant Science												
10. Differentiate Between Monocot and Dicot	2.78	1.57	2.84	1.48	-0.21	0.84	3.12	0.81	3.06	0.85	1.00	0.33
11. Match Functions with Plant Parts	2.84	1.20	2.86	1.18	-0.12	0.91	3.06	1.00	3.00	1.03	1.00	0.33
12. Prepare and Plant a Seed Bed	3.59	1.19	3.50	1.25	0.38	0.71	3.75	0.93	3.62	0.96	1.00	0.33
13. Identify Commonly Grown Crops in Area	3.90	1.06	3.54	1.02	1.91	0.06	4.31	0.79	4.31	0.79	0.00	1.00
14. Identify Common Weeds in Area	3.19	1.14	3.11	1.26	0.35	0.73	3.50	1.09	3.56	1.03	-0.37	0.72
15. Identify Common Insect Pests in Area	3.01	1.08	2.46	0.99	2.95	0.00*	2.81	0.83	2.69	0.60	1.00	0.33
16. Identify Common Plant Diseases	2.19	1.11	2.03	1.08	0.79	0.43	2.56	0.89	2.50	0.82	1.00	0.33
17. Identify Commonly Used Landscape Trees, Shrubs & Ground Covers	2.69	1.24	2.81	1.10	-0.57	0.57	2.25	1.00	2.19	0.98	1.00	0.33
18. Read a Landscape Plan	2.38	1.23	2.38	1.23	-0.00	1.00	2.19	1.22	2.06	1.24	1.46	0.16
Soil Science												
19. Complete a Soil Sample Request Form	2.45	1.23	2.68	1.25	-0.99	0.32	3.50	1.03	3.37	0.96	1.46	0.16
20. Follow Fertilizer Recommendations	3.45	1.24	3.32	1.35	0.50	0.62	3.75	0.68	3.69	0.70	0.56	0.58
21. Identify Common Rangeland Plants	2.89	1.09	2.56	1.23	1.48	0.14	2.12	1.09	2.31	1.30	-1.00	0.33
22. List Management Practices Used on Pasture	3.02	1.18	3.08	1.14	-0.28	0.78	3.06	0.93	3.19	0.98	-0.81	0.43
23. Apply Soil Conservation Practices to Crop Production	2.93	1.23	2.95	0.97	-0.08	0.93	3.37	0.72	3.50	0.63	-1.00	0.33
24. Identify Soil Textures	3.02	1.17	3.30	1.24	-1.22	0.23	4.06	0.57	4.00	0.73	0.56	0.58
Animal Science												
25. List Common Breeds of Livestock in Area	4.10	1.06	4.22	1.03	-0.62	0.54	4.81	0.40	4.69	0.70	1.46	0.16

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	Student Self-Perception Ratings						Instructor's Perception Students' Competency					
	MALE		FEMALE		SEPARATE		FEMALE		MALE		PAIRED	
COMPETENCY (cont.)	X̄	SD	X̄	SD	t-VALUE	P	X̄	SD	X̄	SD	t-VALUE	P
26. Identify the Body Parts of Beef, Sheep, Swine & Dairy Animals	3.80	1.05	4.06	1.07	-1.27	0.21	4.56	0.63	4.31	0.79	2.24	0.04*
27. Present Oral Reasons for Livestock Selection	3.24	1.25	3.64	1.12	-1.84	0.07	3.50	0.89	3.31	0.70	1.38	0.19
28. Identify the Wholesale Cuts of Beef, Pork & Lamb	3.10	1.12	3.25	1.23	-0.65	0.52	3.69	0.79	3.50	0.63	1.86	0.08
29. Balance a Ration	3.08	1.23	3.28	1.16	-0.91	0.36	3.50	1.03	3.25	0.86	2.24	0.04*
30. Match Nutrients with Functions, Sources & Deficiency Symptoms	2.63	1.08	2.89	1.04	-1.33	0.19	3.44	0.81	3.31	0.79	1.00	0.33
31. Classify Animals According to Simple or Ruminant Digestive Tract	3.13	1.35	3.22	1.53	-0.34	0.73	4.44	0.81	4.31	0.79	1.46	0.16
32. List Symptoms of Poor Animal Health	3.25	1.14	3.61	1.22	-1.62	0.11	4.31	0.70	4.19	0.75	1.46	0.16
33. Castrate, Dock & Dehorn Livestock	3.80	1.34	3.44	1.48	1.33	0.19	3.69	1.08	3.07	1.09	-1.00	0.33
34. Develop an Animal Health Calendar for Vaccination	3.00	1.28	3.42	1.20	-1.83	0.07	3.69	0.87	3.62	0.96	0.56	0.58
35. Identify Common Disease Symptoms	3.04	1.11	3.11	1.09	-0.37	0.71	3.81	0.75	3.62	0.81	1.86	0.08
36. Identify the Parts of the Reproductive Tract of a Cow	3.22	1.32	3.36	1.15	-0.62	0.54	3.37	0.81	3.31	0.79	0.56	0.58
37. Grade Livestock Based Upon USDA Quality and Yield Grade	2.88	1.21	3.31	1.09	-2.04	0.05*	3.25	1.00	3.12	1.02	1.45	0.16
Agricultural Mechanics												
38. Select a Fire Extinguisher for Each Class of Fire	3.24	1.43	2.44	1.34	3.14	0.00*	2.94	1.34	3.12	1.31	-1.38	0.19
39. Identify Common Tools Used in Agricultural Mechanics	4.02	1.11	3.11	1.14	4.30	0.00*	3.62	0.88	4.31	0.79	-2.55	0.02*
40. Pass a General Shop Safety Test	4.34	1.01	3.47	1.36	3.59	0.00*	4.19	0.91	4.62	0.50	-1.96	0.07
41. ARC Weld in Flat, Horizontal & Vertical Positions	3.82	1.22	2.69	1.41	4.38	0.00*	3.25	1.18	4.37	0.50	-4.39	0.00*
42. Weld, Braze and Cut with Oxyacetylene	3.76	1.22	2.44	1.27	5.56	0.00*	2.94	0.93	4.37	0.50	-6.45	0.00*
43. Safely Operate Farm Equipment	4.20	1.01	3.20	0.96	5.43	0.00*	3.50	0.73	4.19	0.75	-2.91	0.01*
44. Perform Daily Maintenance Procedures on Tractors	3.85	1.21	2.50	1.23	5.89	0.00*	3.31	1.08	4.31	0.70	-4.14	0.00*
45. Read a Drawing of a Project to Construct in the Shop	3.92	1.03	2.69	1.21	5.59	0.00*	3.27	1.16	3.67	0.82	-1.57	0.14
46. Complete a Bill of Materials for a Project	3.96	1.10	3.03	1.23	4.13	0.00*	3.62	1.20	3.94	0.85	-1.23	0.24
47. Cut, Fit and Join Pipe	3.87	1.15	2.14	1.12	8.21	0.00*	2.81	0.91	3.25	1.12	-2.41	0.03*
48. Do Differential Leveling	2.79	1.27	1.95	1.13	3.95	0.00*	3.31	1.35	3.62	1.15	-1.16	0.26
49. Use a Micrometer	2.97	1.35	1.95	1.20	4.51	0.00*	2.60	0.99	3.00	1.00	-2.10	0.05
50. Service a Small Engine	3.75	1.15	1.73	1.12	9.71	0.00*	2.87	1.09	4.00	0.63	-5.08	0.00*
51. Identify Types of Electrical Circuit Protection Devices	2.97	1.18	1.84	1.01	5.84	0.00*	2.25	1.06	2.81	1.11	-2.18	0.04*
52. Survey Home Farm for Unsafe Electrical Conditions	2.97	1.28	2.32	1.31	2.68	0.01*	3.12	1.02	3.19	0.91	-0.37	0.72
53. Wire a Lighting Outlet Controlled by a Single Pole Switch	3.26	1.48	2.11	1.35	4.53	0.00*	2.69	1.30	3.00	1.46	-1.32	0.21

NOTE: All competencies that show a statistically significant probability at or beyond the .05 level are marked with *.

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Objective Number Three

Table three presents only those competencies which were statistically significant concerning the self-assessment perceptions of male and female students as compared with the vocational agriculture instructors' perceptions of their male and female students' agricultural competencies.

Of all the competencies for which there was a statistically significant difference between student and instructor mean scores, in only two cases did the instructor rate the student lower than the student's self-perception, and both of those instances were for male students (see competencies numbered 15 and 47 on Table 3).

Female students had 18 competencies for which vocational agriculture instructors rated their agricultural competencies above the female students' self-assessment. Proportionately the greatest number of differences occurred for females in the Agricultural Mechanics area.

Male students had 18 competencies for which vocational agriculture instructors rated their agricultural competencies above the male students' self-assessment. The differences were spread along all taxonomies.

Twelve agricultural competencies rated differently by students as compared to their instructors were shared in common for both males and females (Table 3).

Since female students tended to rate Animal Science as their technical area of strength, a comparison was done of those female students who rated Animal Science as their strength with male students who rated Animal Science as their strength.

Table 3: Male and Female Student Perceptions of Competency Attainment
Compared to the Perceptions of Instructors for Their Male and Female Students

	MALE STDNT		TCHR PERCEP. MALE STDNT		SEPARATE		FEMALE STDNT		TCHR PERCEP. FEMALE STDNT		SEPARATE	
COMPETENCY	X̄	SD	X̄	SD	t-VALUE	P	X̄	SD	X̄	SD	t-VALUE	P
1. Serve on a Committee	3.28	1.19	3.94	0.97	-2.60	0.02*	----	----	----	----	----	----
2. Lead a Discussion	3.12	1.22	3.94	0.75	-3.95	0.00*	----	----	----	----	----	----
3. Deliver a 3-8 Minute Speech to the Class	3.20	1.24	3.71	0.85	-2.18	0.04*	3.62	1.50	4.25	0.77	-2.01	0.05*
5. Plan an FFA Activity	3.13	1.28	4.12	0.72	-4.77	0.00*	----	----	----	----	----	----
6. Use Basic Parliamentary Procedure in Conducting a Meeting	3.27	1.27	4.16	0.90	-3.26	0.00*	----	----	----	----	----	----
8. Select an Agricultural Occupation	----	----	----	----	----	----	3.70	1.27	4.27	0.46	-2.36	0.02*
9. Develop an SOEP Which Leads to an Agricultural Occupation	3.27	1.30	3.76	0.83	-2.15	0.04*	3.25	1.32	4.06	0.77	-2.78	0.01*
13. Identify Commonly Grown Crops in Area	----	----	----	----	----	----	3.54	1.02	4.31	0.79	-2.98	0.01*
15. Identify Common Insect Pests in the Area	3.01	1.08	2.65	0.61	2.09	0.05*	----	----	----	----	----	----
19. Complete a Soil Sample Request Form	2.45	1.23	3.35	0.93	-3.65	0.00*	2.68	1.25	3.50	1.03	-2.50	0.02*
23. Apply Soil Conservation Practices to Crop Production	2.93	1.23	3.47	0.62	-2.95	0.01*	----	----	----	----	----	----
24. Identify Soil Textures	3.02	1.17	4.00	0.71	-4.95	0.00*	3.30	1.24	4.06	0.57	-3.06	0.00*
25. List Common Breeds of Livestock in the Area	4.10	1.06	4.65	0.70	-2.86	0.01*	4.22	1.03	4.81	0.40	-3.02	0.00*
26. Identify the Body Parts of Beef, Sheep, Swine & Dairy Animals	3.80	1.05	4.29	0.77	-2.37	0.03*	4.06	1.07	4.56	0.63	-2.13	0.04*
30. Match Nutrients w/ Their Functions, Sources & Deficiency Symptoms	2.63	1.08	3.35	0.79	-3.43	0.00*	2.89	1.04	3.44	0.81	-2.06	0.05*
31. Classify Animals According to Simple or Ruminant Digestive Tract	3.13	1.35	4.35	0.79	-5.53	0.00*	3.22	1.53	4.44	0.73	-3.88	0.00*
32. List Symptoms of Poor Animal Health	3.25	1.14	4.18	0.73	-4.63	0.00*	3.61	1.22	4.31	0.70	-2.60	0.01*
35. Identify Common Disease Symptoms	3.04	1.11	3.59	0.80	-2.58	0.02*	3.11	1.09	3.81	0.75	-2.69	0.01*
40. Pass a General Shop Safety Test	----	----	----	----	----	----	3.47	1.36	4.19	0.91	-2.22	0.03*
41. ARC Weld in Flat, Horizontal & Vertical Positions	3.82	1.22	4.35	0.49	-3.41	0.00*	----	----	----	----	----	----
42. Weld, Braze, and Cut with Acetylene	3.76	1.22	4.35	0.49	-3.41	0.00*	----	----	----	----	----	----
44. Perform Daily Maintenance Procedures on Tractors	3.85	1.21	4.29	0.69	-2.30	0.03*	2.50	1.23	3.31	1.08	-2.40	0.02*
47. Cut, Fit and Join Pipe	3.87	1.15	3.24	1.09	2.24	0.04*	2.14	1.12	2.81	0.91	-2.28	0.03*
48. Do Differential Leveling	----	----	----	----	----	----	1.95	1.13	3.31	1.35	-3.54	0.00*
50. Service a Small Engine	----	----	----	----	----	----	1.73	1.12	2.87	1.09	-3.49	0.00*
52. Survey Home Farm for Unsafe Electrical Conditions	-----	----	----	----	----	----	2.32	1.31	3.12	1.02	-2.39	0.02*

NOTE: The * indicates those competencies which had statistically significant t-test values at the .05 probability level or greater.

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Only nine competencies were rated by the male and female students as being statistically significant; they are listed in Table four. Seven of the nine differences are in the Agricultural Mechanics area.

A second comparison was made comparing male and female students who both identified Agricultural Mechanics as their weakest area. Table five presents that data, identifying only those competencies which were statistically significant for this comparison.

There were only four statistically significant t-value differences when comparing female and male students who both identified Agricultural Mechanics as their weak area.

Tables four and five show that when similar strengths or weaknesses were identified, male and female students rated their competency level attainment very similarly.

Table 4: Statistically Significant Competency t-Test Values for Female and Male Students Who Identified Animal Science as Their Strength

	COMPETENCY	FEMALE $\bar{X}$	FEMALE SD	MALE $\bar{X}$	MALE SD	SEPARATE t-VALUE	P
4.	Follow Rules When Introducing Others	4.18	0.87	3.17	1.13	-3.13	0.00*
17.	Identify Common Landscape Trees, Shrubs, and Ground Covers	3.25	0.87	2.58	1.20	-2.08	0.05*
39.	Identify Common Tools Used in Agricultural Mechanics	3.09	0.83	3.97	0.97	2.95	0.01*
43.	Safely Operate Farm Equipment	3.18	0.75	4.17	0.91	3.61	0.00*
44.	Perform Daily Maintenance Procedures on Tractors	2.36	1.12	3.81	1.16	3.70	0.00*
45.	Read a Drawing of a Project to Construct in the Shop	2.73	1.10	3.86	1.09	2.98	0.01*
47.	Cut, Fit and Join Pipe	2.36	1.12	3.81	1.09	3.76	0.00*
50.	Service a Small Engine	1.67	0.89	3.58	1.13	6.03	0.00*
51.	Identify Types of Electrical Circuit Protection Devices	1.75	1.22	2.74	1.08	2.48	0.02*

NOTE: The designation * means statistically significant at or beyond the .05 level.

Table 5: Competency T-Test Values for Female and Male Students Who Identified Agricultural Mechanics as Their Weakness

	COMPETENCY	FEMALE $\bar{X}$	FEMALE SD	MALE $\bar{X}$	MALE SD	SEPARATE t-VALUE	P
45.	Read Drawing of Project To Construct in Shop	2.28	0.96	3.44	1.13	2.66	0.02*
46.	Complete a Bill of Materials for a Project	2.78	1.06	3.78	0.83	2.68	0.02*
50.	Service a Small Engine	1.47	0.96	2.78	1.09	3.06	0.01*
51.	Identify Types of Electrical Circuit Protection Devices	1.58	0.84	2.89	1.05	3.27	0.01*

NOTE: The designation * means statistically significant at or beyond the .05 level.

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CONCLUSIONS

I. Conclusions for objectives number one and two combined.
It was concluded that equity exists in all phases of the vocational agriculture curriculum at the Junior level except for Agricultural Mechanics.

   A. This conclusion was supported by the fact that all Agricultural Mechanics competencies were rated higher (statistically significant) by male students than by female Junior level vocational agriculture students.
   B. This conclusion was further supported by the vocational agriculture instructors' rating of their own Junior level students; eight of the sixteen Agricultural Mechanics competencies were statistically significantly higher for male students as compared to female students.
   C. Conclusion "I" was further supported by a close review of male and female students' actual scores in the Agricultural Mechanics block. It was noted that most Agricultural Mechanics mean scores were actually one to two points higher for male students as compared to female students on the five point rating scale provided. For all practical purposes that would translate to one or two letter grade differences between male and female students in Agricultural Mechanics.
   D. The final evidence supporting conclusion "I" was that only in the Agricultural Mechanics area was there a consistancy of rating the competencies of one group (sex) lower than another, among both students and instructors.

II. Conclusion for objective number three.
Vocational agriculture teachers perceived student competency attainment to be higher than did the students themselves, with no obvious taxonomic preference to either male or female students except: six (6), or one-third, of the female competencies statistically significant differences were in the Agricultural Mechanics taxonomy.

   A. Support for this conclusion was gained from the fact that 20 of the 53 competencies for male students were rated statistically significantly higher by instructors as compared to the male students' self-ratings.
   B. Eighteen (18) of the 53 competencies for female students were rated statistically significantly higher by instructors as compared to the female students' self-ratings.
   C. Six (6) of the 18 statistically significant female competencies were in the Agricultural Mechanics taxonomy.

III. Conclusions regarding students with similar strength and weakness areas. More equity in competency level attainment existed between male and female student groups who had identified similar taxonomic strengths or weaknesses.

   A. Support for conclusion "III" came from the fact that when Animal Science was identified as a strength only nine competencies were identified as statistically significant. Seven of those nine were in Agricultural Mechanics but this still represented a reduction from 16 statistically significant differneces in Agricultural Mechanics in the original grouped test for students to seven in the

Animal Science as a strength area test.

B. Further support for conclusion "III" was gained from the Agricultural Mechanics as a weakness test. Only four competencies were statistically significant in this taxonomic weakness classification grouping, however all differences were in the Agricultural Mechanics taxonomy.

RECOMMENDATIONS

I. It is recommended that vocational agriculture instructors identify those sex biased concepts, terms, language characteristics, expectations, and generalizations which cause female students not to desire to gain competence in Agricultural Mechanics. Once identified those criteria should be removed from the vocational agriculture instructor's habit patterns.

A. The literature citations with which this paper was started indicated that the instructors play an important role in this area.

B. Vocational agriculture instructors perceived female competency attainment in Agricultural Mechanics higher than did female students, disproportionately to the distribution in other taxonomies. This may lead instructors to think that they provide equity for male and female students when they may not.

C. Even when similar taxonomic strengths and weaknesses were identified, the single area within which statistically significant differences existed between male ad female students was Agricultural Mechanics.

DISCUSSION AND PRACTICAL IMPORTANCE OF THE STUDY

Regardless of the lip service paid to sex-equity, many vocational agriculture instructors fail to provide the same level of competence attainment in Agricultural Mechanics for females as is provided for males. One should ask if this is appropriate.

The practical importance of this study can then be said to be that a real difference exists for competency attainment in the agricultural curriculum that many people are saying does not exist. The difference is in the Agricultural Mechanics taxonomy, which does not surprise many people, but the difference must be addressed. Instructors must be aware of their sex-role-stereotyping in the form of the language they use to motivate students and in the expectations they have for all students in the Agricultural Mechanics portion of their programs.

As specific strengths and weaknesses were identified the number of statistically significant differences were reduced. This may indicate that as an instructor had students identify specific occupational objectives, and as student programs were taylored to those objectives, perhaps competency attainment differences would be reduced even further.

Even with the reduction in differences provided by the identification of similar strengths and weaknesses the areas of differences were still primarily in the taxonomy of Agricultural Mechanics and therefore instructors must be more cautious of sex-equity violations in Agricultural Mechanics than currently exists.

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CRITIQUE

Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and Natural Resources Education

by

Jimmy G. Cheek and Max B. McGhee

Crop Production Skills Possessed and Taught by Vocational Agriculture Teachers in Illinois

by

Ed Osborne

Vocational Agriculture Competencies and Sex-Equity in Oregon

by

Richard L. Cole

Concurrent Session F, December 6, 1985

Twelfth Annual National Agricultural Education Research Meeting
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Atlanta, Georgia

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The three papers I reviewed for this session emphasized the ways that vocational agriculture teachers directly influence educational outcomes. The teacher variable is evident as curriculum decisions are made and teaching strategies are selected. For example, what skills or competencies should I teach and what methods should I use? The teacher's own ability to perform specific learning tasks will influence instruction. If teachers feel they can confidently perform certain skills they may be more likely to include these skills in their instructional programs. How teachers perceive student skill level also may have an impact on learning outcomes. For example, do I believe boys are more competent than girls in certain technical areas, such as agricultural mechanics? With these questions in mind, I will briefly review the three papers with the purposes of promoting discussion on research methodology and suggesting improvements for future research studies.

The **Cheek/McGhee** study is a continuation of their research reported last year at this meeting in the area of competency assessment. The study is designed to measure and analyze the level of mastery of vocational agriculture students on an achievement test and to determine if instructors are teaching competencies identified in the state curriculum guide. The purpose of the study was clearly stated. The introduction/review of related literature provided an excellent foundation and placed the study in the proper prospective.

Three research objectives were formulated for the descriptive study. No rationale was provided for investigating the specific student characteristics listed in Objective 2. The target population for the study was clearly identified. A non-random sample was selected that consisted of 52 teachers who indicated a willingness to participate in the study. No mention was made regarding the geographic distribution of the self-selected sample. Reliability coefficients for the achievement test ranged from $r = .77$ to $r = .94$ for the six sections of the test. Content validity was not discussed. Data collection techniques were omitted from the paper. No information was given on conditions of testing or follow-up of non-respondents. These omissions can threaten accurate interpretation of the findings. Data analysis methods were adequately outlined and followed the specific research objectives. Response rates of 85% for teachers and 65% for students were not directly mentioned by the authors. The findings were clearly summarized and were organized by the main research objectives. Tables were readable and contained accurate data.

Conclusions were consistent with the obtained results. However, generalizations were not confined to the population studied and recommendations tended to be rather prescriptive considering the nature of the sample. Several strategies were identified for strengthening instruction in the Applied Principles programs, but no rationale was provided for these particular recommendations. The third recommendation was based on a statistically significant difference between students involved in FFA/SOE activities and students not involved in these types of activities. A discussion of the practical significance of a 3-point difference on the achievement test scores between the two groups would have been interesting. The fourth recommendation for further study was appropriate since the instructors surveyed were spending 54% of their time teaching competencies not identified by the state curriculum guide.

The **Osborne** study was designed to determine crop production skills possessed by production agriculture teachers in Illinois and the extent to which certain crop production skills were taught in vocational agriculture classes. This research is similar to previous studies conducted by Dr. Osborne in the area of livestock skills. The purpose of the study was clearly stated and followed an adequate introduction/review of literature. Four research questions were formulated for the descriptive correlational study. The target population for the study was clearly specified. However, discussion of sampling methods was rather limited. The researcher did not explain if a stratified random sample was drawn, if the sample represented teachers throughout the state, or why 100 subjects were selected. Several questions were left unanswered that may have influenced the results of the study. Reliability coefficients calculated for the research instrument were excellent with r values of .98. Content validity for the instrument was not directly mentioned. Was the reader to assume that instrument validation was achieved by the review of literature and interviews with two college of agriculture faculty? Documentation of data collection procedures was somewhat confusing. From reading the paper, the initial mailing apparently contained the instrument, cover letter, follow-up postcard, two additional follow-up letters and questionnaires. Although not a major point, this does emphasize the need for clarity in our writing. Data analysis procedures using Pearson correlation coefficients and descriptive statistics were appropriate for this study.

The author did an excellent job of summarizing information presented in the tables. The reader knew immediately what the major findings of the study were. The results section of the paper corresponded directly with the four research questions which provided a well-organized and integrated approach to the findings. Data were summarized accurately with the exception of one area. The author asked the instructors to identify the major teaching method they used to teach each of the 112 crop production skills. Table 5 illustrates the teachers' responses, ranging from classroom discussion to student practice. The author states that over one-third of the instructors used classroom discussion only as their major teaching method. I would question that statement. The instructors may have been using several teaching methods for each skill, but they were asked to check only one method, i.e., the primary method they used to teach the skill. Perhaps a rank order of teaching methods used would have provided a more accurate picture of instructor behavior.

The majority of the conclusions were consistent with the obtained results of the study, and generalizations were confined to the target population. The author concludes that "a large majority of the instructors either do not teach certain crop production skills or they 'teach about' the skill through classroom discussion and field observation." No discussion was provided for possible reasons why certain crop production skills are not taught. Perhaps the instructors teach crop production skills every other year, they may be in a multiple teacher department and do not have responsibility for crop production, they may not have access to the equipment or land necessary to practice certain skills, or the teaching of some crop production skills is handled during SOE on-site instructional visits. The author does recommend that teachers be surveyed to identify reasons they do not provide more demonstrations and student practice. I would add also to identify reasons the instructors are not teaching certain crop production skills since performance and confidence levels may only be partial answers explaining the teachers' instructional decisions. The author concludes that teachers should be supported in their farming ventures because crop production skill performance levels are enhanced by active involvement in field crop production. I was curious as to how this support might be provided for the teacher. Although the five recommendations for further research are appropriate, no rationale was given for why the studies should be conducted. Explaining how these studies will add to or build upon the current research would have been enlightening.

The main purpose of the **Cole** research was to study the differences between male and female self perceptions of competency levels on certain agricultural skills. The study also focused on instructors' perceptions of student competency levels. The title of the paper does not correspond with the objectives of the study. The introduction/review of literature for the study was inadequate, consisting of two sentences taken from a previous study. The research cited was five to ten years old and the author made no attempt to integrate his own thoughts into a rationale for the study. No reasons were offered as to why the research should be conducted.

The sample for the study consisted of two vocational agriculture programs per FFA district. The author does not explain why FFA districts were the important strata to sample. No mention was made of the target population, nor were data provided on the numbers of programs, teachers, and students involved in the sampling process. Teachers without Ag III classes were included in the sample indicating frame error. No rationale was given as to why Ag III students were selected to participate in the study. Why not Ag I, II, or IV students? Content validity of the research instrument was established by a panel of experts, but no information was provided on why 53 agricultural competencies were selected for the study. No evidence of the reliability of the research instrument was provided; all that was measured could have been in error. A discussion of data collection techniques was omitted completely from the paper. Data analysis methods were inappropriate for comparing multiple dependent variables, i.e., the 53 competencies. The response rate section was confusing, incomplete, and contained grammatically incorrect sentences.

Items 2 - 6 in Table 1 do not relate to the research objectives. For items 7 and 8, the researcher does not identify how the strongest and weakest areas in Vo-Ag were quantified. Several problems are associated with Tables 2, 3, 4, and 5. First, all four tables involve multiple comparisons where there is overlapping information with respect to the dependent variables. The respondents rated all dependent variables (i.e., the 53 competencies) on a 5-point scale. The responses are regarded as correlated data because the response the students and teachers give on one item is most likely not independent of their responses to the other items. Oliver (1981) explains that for studies involving one independent variable, categorized in this instance by sex, and a large number of dependent variables, in this case the 53 competencies, the probability of making a Type I error for the set of all possible comparisons is not equal to alpha. The experiment-wise error rate or the probability of committing at least one Type I error over the set of 53 comparisons is not .05, but is < 1.00. Second, in Tables 2 and 3, the researcher is comparing the self perceptions of individual students with the teacher's perception of all males and all females grouped together. Group data is being compared with individual data. Third, Tables 4 and 5 contain data that were not related to a specific research objective.

Conclusion 1 is invalid; there are no data about equity. The author concludes that equity exists in all phases of the vocational agriculture curriculum except for agricultural mechanics. Apparently equity exits because few or no statistically significant differences were found between male and female perceptions of competency levels. The study was not designed to determine the existence of equity. Additionally, the 53 competencies do not represent all phases of the vocational agriculture curriculum, but only a partial list of possible skills taught in vocational agriculture. There are no summated data to support Conclusion 1, parts C and D. The author concludes that a higher mean score for male students on the agricultural mechanics section translates into a one to two letter grade difference between males and females in agricultural mechanics. The researcher has no evidence to support this claim. Conclusion 3 discusses "more equity" in competency level attainment--I have two concerns here. First, the author is equating equity with statistical significance and second, the study did not attempt to determine actual competency levels but only measured perceptions of competence.

Generalizations are not confined to the target population or to the objectives of the study. Recommendation 1 is inappropriate. The author is not studying factors that "cause females not to desire to gain competence in agricultural mechanics." The discussion section of the paper contains inaccurate and misleading information. The author is substituting statistical significance for practical significance when stating that a real difference exists for competency attainment. Again, the study does not address competency attainment but perceptions of competency levels. The author admonishes instructors to be more cautious of sex-equity violations in agricultural mechanics. Teacher behaviors were not investigated. I believe the entire study reflects a lack of understanding about sex-equity, especially since the term was not defined or clearly identified as a focus of the study. In summary, the paper I reviewed was of poor quality in terms of format and research methodology.

In conclusion, I would like to make a general comment about any paper that goes through our review process. I believe our national research meeting should be a forum for the most outstanding research in our profession. Our research capabilities are reflected by the types of papers we present. I realize we have page limitations on the papers for this meeting and not all the relevant information can be included. However, I am concerned about a review process that allows us to accept papers that violate the basics of sound research methodology. We need to continually strive for excellence and rigor as we conduct and report research in our discipline.

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VOCATIONAL AGRICULTURE TEACHERS' PERCEPTIONS OF YOUNG/ADULT EDUCATION PROGRAMS IN AGRICULTURE

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INTRODUCTION

A marked absence of young and adult farmer education programs exist in many school districts in the South, although some educators advance a strong need for these programs. In addition, there has been a decline in such programs in some southern states over the past four decades. In Kentucky, every vocational agriculture teacher was responsible for adult classes during the early post-war period (Miller, 1976). Iverson (1975) examined empirical data and reported:

> In many states, the number of adults served today as compared with the early 1960's has remained the same or declined. Nationally, there has been a steady decline in the actual numbers served and in the percentage of adults enrolled compared to secondary and post-secondary students (p. 8).

A 1979 study revealed that only 30 percent of the high school vocational agriculture programs in Louisiana had adult education classes (Kotrlik and Felter, 1981).

Lee (1981) was concerned that adult education programs in agriculture do not have the same priority as they did some years ago. He urged that this aspect of vocational agriculture needs to be given careful study and placed in proper perspective. Miller (1981) urged that teacher educators in agriculture be prepared to meet the in-service needs of a clientele which was heavily engaged in adult education and further recommended that research into adult education in agriculture should proceed immediately (p. 4).

PURPOSE AND OBJECTIVES

The main purpose of this study was to determine vocational agriculture instructors' perceptions of selected educationally related activities of young/adult agricultural education programs in the South.

Objectives of the Study

The following specific objectives were formulated to guide the researcher:

1. Determine vocational agriculture teachers' perceptions of their roles and responsibilities for young/adult education programs.
2. Determine vocational agriculture teachers' perceptions of the importance of selected program related factors for young/adult programs.
3. Identify differences in perceptions between vocational agriculture teachers with young/adult programs and vocational agriculture teachers without young/adult programs, regarding their roles and responsibilities for these programs.
4. Identify differences between teachers with young/adult programs and teachers without young/adult programs regarding their perceptions of the importance of selected program related factors for these programs.

PROCEDURES

Population and Sample

The population for the study was secondary vocational agriculture teachers in the thirteen states making up the Southern Region of the American Association of Teacher Educators in Agriculture. Of these thirteen states comprising the Southern Region, four states were randomly selected for this study.

To determine the needed sample size, Krejcie and Morgan's sample size table was utilized. The total number of vocational agriculture teachers in the Southern Region was estimated to be 5,308. Therefore, the needed sample size, according to Krejcie and Morgan, was 361.

A directory of vocational agriculture teachers with their mailing addresses was secured from the state supervisors of agricultural education in each of the four states sampled. These four directories served as the frame of the accessible population for the study. Using these directories and a table of random numbers, a proportional random sample of 25.4 percent of the vocational agriculture teacher population in each of the four states was selected.

Instrumentation

The instrument used for collecting data in this study was a researcher designed, closed form opinionnaire with an eleven point Likert-type scale. Content validity of the instrument was established through a review by a panel of experts comprised of agricultural teacher educators and vocational agriculture teachers.

Section I of the instrument sought the respondents' perceptions of their responsibilities for 16 selected young/adult educationally related activities, and section II sought vocational agriculture teachers' perceptions of the importance of 28 program related factors associated with young/adult programs.

The response framework for the instrument was provided by the Certainty Method (Warren, Klonglan, and Sabri, 1969). Teachers were presented with a statement followed by an 11-point continuum and were asked to circle the number on the scale that best described their opinions based on the descriptions presented by the researcher. The participants' response to the 11-point continuum was then transformed to a 0 to 16 certainty scale based on the following system:

Row 1 - Numerical Value										
1	2	3	4	5	6	7	8	9	10	11
To a little extent				To some extent				To a large extent		
Row 2 - Transformed Values										
0	3	5	6	7	8	9	10	11	13	16

According to Warren et al. (1969), the transformed value "spreads" the ends of the original scale and thereby increases the reliability of the instrument. They stated also that there is a greater difference between a respondent who rates an item "1" and a respondent who rates an item "2" than there is between a respondent who rates an item "5" and another who rates an item "6".

Data Collection

Data for the study were collected by mailed questionnaire. The initial mailing and three follow-up mailings yielded a 76.5 percent return rate. A 25 percent random sample of the remaining non-respondents was then selected and intensively followed up by telephone. After a 100 percent return rate from the intensive follow-up group was attained, their responses were statistically compared with those of the earlier respondents. The intensive follow-up group was not found to be significantly different (at the .05 level) in their responses when compared with the responses of the earlier sample.

Of the 361 questionnaires sent out, a total of 292 (80.9 percent) usable responses were returned.

After data were collected, reliability coefficients were computed for each section of this questionnaire. Section I, which consisted of 16 items representing "Roles and Responsibilities" had a reliability coefficient of r=.93 (Cronbach's alpha). Section II, which consisted of 28 items representing "Program Factors," had a reliability of r=.89 (Cronbach's alpha).

RESULTS

Perceived Roles and Responsibilities

The means and standard deviations were computed for sixteen selected "Roles and Responsibilities" items related to young/adult education programs in agriculture. These findings are presented in Table 1.

The responding vocational agriculture teachers (N = 292) rated all sixteen "Roles and Responsibilities" items above the midpoint on the 0 to 16 transformed scale. The "Roles and Responsibilities" item "Providing and organizing instructional facilities for young/adult classes" received the highest mean rating (11.18). Other items receiving high ratings included: "Soliciting resource personnel" (mean = 10.93), "Providing instruction in agricultural mechanics" (mean = 10.69), and "Surveying community needs to develop curriculum for young/adult programs" (mean = 10.60).

The items rated lowest by responding vocational agriculture teachers were "Budgeting for and financing all young/adult education activities" (mean = 8.11) and "Developing printed informative materials for young/adult farmers" (mean = 8.64).

Perceived Importance of Program Factors

The means and standard deviations for the 28 selected young/adult program related factors are presented in Table 2.

The sample of vocational agriculture instructors (N = 292) rated 22 of the 28 "Program Factors" items above mid-point on the 0 to 16 scale.

The three items with the highest means were "Using vocational agriculture shop facilities to instruct farmers in agricultural mechanics" (12.22), "Improving rapport between the school and the community through young/adult activities" (11.88), and "Publicizing young/adult programs to make school administrators or school board members more aware of the total vocational education program" (11.85).

Table 1

Means, Standard Deviations and Ranks for Perceived Roles and Responsibilities

Roles and Responsibilities	Mean S.D.	Rank
Providing instructional facilities for young/adult classes	11.18[a] 3.28	1
Soliciting resource personnel	10.93 3.42	2
Providing instruction in agricultural mechanics	10.69 2.97	3
Surveying community needs to develop curriculum for young/adult programs	10.60 3.02	4
Securing visual and teaching aids	10.47 3.01	5
Conducting follow-up visits to young/adult program participants	10.41 3.59	6
Organizing advisory committees	10.33 3.44	7
Planning and organizing young/adult farmer educational programs	10.09 3.15	8
Providing instruction in production agriculture	10.03 3.05	9
Providing instruction in farm management	10.01 3.20	10
Coordinating all young/adult educational programs in the school district	9.54 3.47	11
Supervising field demonstration plots for the young/adult program	9.16 3.27	12
Conducting short courses on the procurement of financial assistance for small farm operators	8.90 3.37	13
Organizing demonstration plots as teaching aids to the young/adult program	8.89 3.59	14
Developing printed informative materials for young/adult farmers	8.64 3.30	15
Budgeting for and financing all young/adult educational activities	8.11 3.66	16

Note. *N*=292

[a] The scale utilized ranged from 0 to 16 with 0 being to a little extent and 16 being to a large extent.

Table 2

Means, Standard Deviations and Ranks for Perceived Importance of Program Factors

Program Factors	Mean S.D.	Rank
Using vocational agriculture shop facilities to instruct farmers in agriculture mechanics	12.22[a] 2.89	1
Improving rapport between the school and the community through young/adult activities	11.88 3.08	2
Publicizing young/adult programs to make school administrators or school board members more aware of the total vocational education program	11.85 3.38	3
Surveying small farmers to determine their educational needs	11.15 2.82	4
Providing systematic instructions in a variety of subjects	11.05 2.94	5
Organizing classes for systematic instruction	11.01 2.88	6
Using feedback from the young/adult program to improve the total vocational agriculture program	11.01 2.88	6
Using young/adult programs to identify the problems of the farm and farm managers	10.83 3.02	8
Developing specific programs to serve the needs of small farmers	10.73 3.16	9
Surveying agribusinessmen to help determine educational needs of young/adult farmers	10.41 3.39	10
Drawing advisory committee candidates from young/adult classes	10.34 3.25	11
Integrating young/adult education into the total vocational agriculture program	10.03 3.61	12
Encouraging young/adult program participants to volunteer the services of their equipment	9.90 3.02	13
Assigning primary responsibilities for establishing young/adult programs to vocational agriculture teachers	9.88 3.59	14

(table continues)

Program Factors	Mean S.D.	Rank
Requiring young/adult program participants to pay for materials only	9.72 3.51	15
Using advisory committees for evaluating young/adult programs	9.65 3.47	16
Placing emphasis on young/adult programs during the summer months	9.61 3.68	17
Developing specific programs for agribusiness employees	9.22 3.11	18
Providing recreational and social activities	9.20 3.41	19
Providing incentives to young/adult farmers to participate in educational programs	8.85 3.51	20
Conducting young/adult programs with vocational agriculture teachers serving only as resource personnel	8.72 3.19	21
Employing a director to coordinate all adult education programs	8.49 4.41	22
Funding young/adult programs through tuition fees paid by participants	7.63 3.86	23
Delimiting adult education programs to intensive short courses	7.56 3.86	24
Dividing young and adult farmers into groups according to their educational needs	7.55 4.22	25
Assigning responsibilities for young/adult education to extension education personnel for establishing young/adult programs	6.67 4.02	26
Using vocational agricultural budgets for financing young/adult activities	6.23 4.50	27
Soliciting donations as the primary source of financing young/adult programs	6.21 3.87	28

Note. *N*=292

[a] The scale utilized ranged from 0 to 16 with 0 being little importance and 16 being great importance.

The three items rated lowest among the 28 items representing the "Program Factors" were "Assigning primary responsibilities for establishing young/adult programs to extension education personnel" (6.67), "Using vocational agriculture budgets for financing young/adult activities" (6.23), and "Soliciting donations as the primary source of financing young/adult programs" (6.21).

Differences in Perceived Roles and Responsibilities

The *t*-test statistic was computed on the sixteen items representing "Roles and Responsibilities" to determine if there were significant differences in the perceptions of vocational agriculture teachers who have conducted young/adult programs, and vocational agriculture teachers who have not conducted such programs.

The *t*-test was utilized since the purpose of the analysis was to compare the two groups of teachers on their perceptions of the specific roles and responsibilities in dealing with young/adult educational activities. The use of multiple *t*-test does, however, cause the inflation of experimentwise error. Therefore, to reduce the impact of this problem, the researchers decided to utilize the .01 level of significance. This procedure does not eliminate the problem, but does tend to reduce its impact on the alpha error. The results of these analyses are reported in Table 3.

The *t*-tests revealed significant differences ($p < .01$) between teachers with programs and teachers without programs for twelve of the sixteen "Roles and Responsibilities" items. Teachers with programs assigned higher mean ratings than teachers without programs to all of the items for which significant differences were observed. The item with the largest difference was "Providing and organizing instructional facilities for young/adult classes" (difference of 1.81). The items "Conducting follow-up visits to young/adult program participants" and "Coordinating all young/adult programs in the school district" also had relatively large differences between group means (1.68 and 1.53 respectively).

The items on which teachers with programs and teachers without programs were most similar were "Supervising demonstration plots for young/adult programs" (difference of 0.06) and "Organizing demonstration plots as teaching aids to young/adult programs" (difference of 0.29). The difference in both of these items were non-significant and rated by both groups of teachers among the lowest in this section.

Differences in Perceived Importance of Program Factors

The *t*-test statistic was computed for the 28 items representing "Program Factors" to determine significant differences in the means between vocational agriculture teachers with young/adult education programs in agriculture and vocational agriculture teachers without young/adult programs, regarding their perceptions of the importance of selected program related factors. As with the "Roles and Responsibilities" item comparisons, the .01 level of significance was used to reduce the impact of experimentwise error inflation. Data relative to these comparisons are presented in Table 4.

Table 3

Differences in Perceived Roles and Responsibilities

Roles and Responsibilities	Group 1[a] Mean S.D.	Rank	Group 2[a] Mean S.D.	Rank	Differences Between Group Means	t-Value
Providing and organizing instructional facilities for young/adult classes	12.06 2.95	1	10.25 3.37	1	1.81	4.85*
Soliciting resource personnel	11.63 2.93	2	10.18 3.74	2	1.45	3.70*
Surveying community needs to develop curriculum for young/adult programs	11.23 2.98	3	9.91 3.13	4	1.32	3.80*
Providing instruction in agricultural mechanics	11.22 2.90	4	10.12 2.94	3	1.10	3.22*
Conducting follow-up visits to young/adult program participants	11.20 2.95	5	9.52 4.01	7	1.68	4.07*
Secure visual and teaching aids	11.13 2.58	6	9.80 3.27	6	1.35	3.93*
Organizing advisory committees	10.83 3.23	7	9.80 3.59	5	1.03	2.56
Planning and organizing young/adult education programs	10.76 2.73	8	9.37 3.42	10	1.39	3.82*
Providing instruction in production agriculture	10.53 2.69	9	9.49 3.42	9	1.04	2.93*
Providing instruction in farm management	10.50 3.14	10	9.50 3.18	8	1.00	2.69*
Coordinating all young/adult programs school district	10.28 3.49	11	8.75 3.28	12	1.53	3.84*
Developing printed informative materials for young/adult farmers	9.26 3.18	12	7.95 3.30	15	1.31	3.44*
Supervising demonstration plots for young/adult programs	9.18 3.20	13	9.12 3.35	11	0.06	0.08
Conducting short courses on the procurement of financial assistance for small farm operators	9.18 3.29	14	8.59 3.46	14	0.59	1.48

(table continues)

Roles and Responsibilities	Group 1[a] Mean S.D.	Rank	Group 2[a] Mean S.D.	Rank	Differences Between Group Means	t-Value
Organizing demonstration plots as teaching aids to young/adult programs	9.04 3.35	15	8.75 3.42	13	0.29	0.69
Budgeting for and financing all young/ educational activities	8.82 3.64	16	7.36 3.54	16	1.46	3.46*

[a] Group 1 = Teacher with young/adult education programs in agriculture (n=151);
Group 2 = Teacher without young/adult education programs in agriculture (n=141).

*$p < .01$

An examination of the raw mean scores revealed that vocational agriculture teachers with programs assigned higher mean scores than their colleagues without programs to 21 of the 28 items representing "Program Factors." Conversely, teachers without programs assigned higher mean scores than teachers with programs to seven of the "Program Factors" items. In addition, the *t*-tests revealed significant differences ($p < .01$) between teachers with programs and teachers without programs, for 11 of the 28 items representing "Program Factors." Vocational agriculture teachers with programs rated 10 items significantly higher ($p < .01$) than teachers without programs, whereas the latter group rated only one item significantly higher ($p < .01$) than the former.

Program factor items with the largest difference in group means included: "Assigning primary responsibilities for establishing young/adult programs to vocational agriculture teachers," (difference of 2.44); and "Integrating young/adult education into the total vocational agriculture program," (difference of 2.09). Both of these items were rated higher by teachers with programs than by teachers without programs.

The one item rated significantly higher by teachers without young/adult educational programs was "Assigning primary responsibilities for establishing young/adult programs to extension education personnel," (difference of 1.81).

The items on which teachers with programs and teachers without programs were most similar were "Encouraging young/adult program participants to volunteer the services of their equipment" (difference of 0.01), and "Conducting young/adult education programs with vocational agriculture teachers serving as resource speakers only" (difference of 0.06).

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, the following conclusions and recommendations regarding vocational agriculture teachers' involvement in young/adult programs were drawn:

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Table 4

Differences Between Group Means for Perceived Importance of Program Factors

Program Factors	Group I[a] Mean S.D.	Rank	Group II[a] Mean S.D.	Rank	Differences Between Group Means	t-Value
Using vocational agriculture shop facilities to instruct farmers in agricultural mechanics	12.64 2.70	1	11.75 3.02	1	.89	2.60*
Improving rapport between the school and the community through young/adult activities	12.62 2.60	2	11.08 3.35	2	1.54	4.34*
Publicizing young/adult programs to make school administrators and school board members more aware of the total vocational agriculture program	12.58 2.77	3	11.05 3.79	3	1.53	3.90*
Organizing classes for systematic instruction	11.74 2.54	4	10.22 3.22	8	1.52	4.46*
Providing systematic instruction in a variety of subjects	11.60 2.75	5	10.45 3.02	6	1.15	3.38*
Using feedback from the young/adult program to improve the total vocational agriculture program	11.48 2.71	6	10.49 2.98	5	0.99	2.92*
Using young/adult programs to identify the problems of the farm and farm managers	11.44 2.58	7	10.17 3.31	9	1.27	3.62*
Surveying small farmers to determine their educational needs	11.41 2.62	8	10.86 3.01	4	0.55	1.66
Developing specific programs to serve the needs of small farmers	11.05 2.86	9	10.38 3.43	7	0.67	1.81
Assigning primary responsibilities for establishing young/adult programs to vocational agriculture teachers	11.04 2.72	10	8.60 3.99	22	2.44	6.08*

(table continues)

Program Factors	Group I[a] Mean S.D.	Rank	Group II[a] Mean S.D.	Rank	Differences Between Group Means	t-Value
Integrating young/adult education into the total vocational agriculture program	11.02 3.08	11	8.93 3.84	18	2.09	5.10*
Drawing advisory committee candidates from young/adult classes	11.00 3.10	12	9.62 3.27	12	1.38	3.66*
Surveying agribusinessmen to help determine the needs of young/adult farmers	10.86 2.87	13	9.91 3.82	10	0.95	2.40
Using advisory committees for evaluating young/adult programs	10.14 3.13	14	9.12 3.75	16	1.02	2.51
Requiring young/adult program participants to pay for materials only	9.99 3.59	15	9.43 3.41	13	0.56	1.34
Placing emphasis on young/adult programs during the summer months	9.92 3.60	16	9.28 3.74	15	0.64	1.46
Encouraging young/adult program participants to volunteer the services of their equipment	9.90 2.87	17	9.91 3.18	10	-0.01	-0.03
Providing recreational and social activities	9.43 3.07	18	8.95 3.74	17	0.48	1.19
Developing specific programs for agribusiness employees	9.10 2.78	19	9.35 3.44	14	-0.25	-0.66
Providing material incentives to farmers for participating in educational programs	8.94 3.41	20	8.75 3.68	19	0.19	0.45
Conducting young/adult programs with vocational agricultural teachers serving only as resource speakers	8.69 3.22	21	8.75 3.18	20	-0.06	-0.16
Employing a director to coordinate all young/adult educational programs	8.27 4.65	22	8.73 4.14	21	-0.46	-0.87

(table continues)

Program Factors	Group I[a] Mean S.D.	Rank	Group II[a] Mean S.D.	Rank	Differences Between Group Means	t-Value
Funding young/adult programs through tuition fees paid by participants	7.47 3.95	23	7.81 3.76	24	-0.34	-0.74
Delimiting young/adult education programs to intensive short courses	7.14 3.86	24	7.03 3.82	26	0.11	1.94
Dividing young and adult farmers into groups according to their educational needs	7.08 4.41	25	8.03 3.82	23	-0.95	-1.98
Using vocational agriculture budgets for financing young/adult programs	6.40 4.41	26	6.03 4.59	28	0.37	0.70
Soliciting donations as the primary source of financing young/adult programs	6.27 3.99	27	6.15 3.75	27	0.12	0.26
Assigning primary responsibilities for establishing young/adult programs to extension education personnel	5.81 3.89	28	7.62 3.96	25	-1.81	-3.89*

[a] Group 1 = Teachers with programs (n=151). Group 2 = Teacher without programs n=141.

*$p < .01$

Conclusions

1. Teachers, in general, perceived that vocational agriculture should have some responsibility for young/adult education programs in agriculture; however, only about 50 percent indicated that they actually conducted programs.

2. Regarding instruction, teachers placed the greatest emphasis on the area of agricultural mechanics. The "Program Factors" item "Using vocational agriculture shop facilities to instruct farmers in agricultural mechanics" and the "Perceived Roles and Responsibilities" item "Providing instruction in agricultural mechanics" were both rated among the top three items in their respective sections. In addition, those items related to providing instruction in production agriculture, farm management, and the procurement of finance were ranked lower (9th, 10th, and 13th respectively) than the item related to providing instruction in agricultural mechanics (ranked 3rd).

3. Teachers who had conducted young/adult education programs perceived a higher level of responsibility for vocational agriculture teachers in the area of young/adult education in agriculture than did those who had not conducted programs. Twelve of the 16 "Roles and Responsibilities" items were rated significantly higher by teachers with programs ($p < .01$).

Recommendations

1. A study should be conducted to determine the cost and benefits of young/adult education programs to the community and the total vocational agriculture program.
2. A causal-comparative study of teachers with young/adult programs and teachers without young/adult programs should be conducted to identify variables which can be associated with the occurrence of effective young/adult programs in agriculture.
3. Increased efforts towards developing a theoretical base, probably drawing from the behavioral sciences, should be made to guide future studies in vocational education.

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ATTITUDES OF SUPERINTENDENTS OF OHIO COMPREHENSIVE HIGH SCHOOLS TOWARD ADULT PROGRAMS

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INTRODUCTION

More than twenty thousand adult students in Ohio were served in 1981-82 through adult programs in vocational agriculture. Fifty-seven of the 88 Ohio counties had Farm Business Planning and Analysis (FBPA) programs available to agriculturalists, with more than 2400 enrolled. The remaining students were enrolled in supplemental adult programs (Starling, 1983). These numbers represent only a small proportion of the audience that could be served through adult programs. Many more adults need education, but programs are no longer growing. A commonly heard explanation for the lack of growth is that school superintendents do not support the program.

Parks (1983) noted that adult vocational agricultural education must continue to improve and grow if agriculturalists are to continue to improve. Numerous studies in other states (Viterna, 1973; Cepica, 1977; McGhee, 1974) have produced inconclusive results regarding administrators' attitudes toward adult programs.

If attitudes could be determined, certain demographic characteristics might help explain any variability among the superintendents. Such knowledge would enable strategies to be developed which would permit the expansion of adult vocational agricultural education. Using practical experience to form a normative theory, certain characteristics were selected as specified in Objective 2.

PURPOSES AND OBJECTIVES

The problem was that knowledge of the attitudes of superintendents of Ohio comprehensive high schools toward adult vocational agricultural education was not known. To address this problem, objectives of the study were stated in the form of research questions. The questions addressed were:

1) What are the current attitudes held by superintendents toward adult vocational agricultural education?
2) What is that relationship between the attitudes of superintendents and the selected demographic characteristics of:
    A) existence of an adult vocational agriculture program in the school?
    B) years of experience as a superintendent?

C) years of experience in public education?
D) years of experience with adult vocational education?
E) having previously been a teacher of vocational agriculture?
F) having previously been a teacher of vocational education?
G) having previously been a teacher of adult education?
H) coursework taken in vocational education?
I) coursework taken in adult education?

PROCEDURES

This was a descriptive study of the survey type. The 1982-83 Ohio Education Directory was used to provide an up-to-date list of superintendents (N=294) and eliminate any frame or selection errors. A random 15% sample, stratified by geographic areas of the state, produced a sample size of 45, to provide a 95% confidence in the results. Therefore, sampling errors were controlled.

The questionnaire was developed from the literature to gather the demographic data and measure the attitudes, using Likert-type scaling, of the superintendents toward adult vocational agricultural education. A panel of five experts of teacher educators and supervisors from the Department of Agricultural Education at The Ohio State University established content validity for the instrument, and a pilot test utilizing the Cronbach's alpha procedure established the internal consistency reliability to be .78.

Data were collected through a mailed questionnaire. Second mailings and telephone calls were made, and produced 41 usable responses from the 42 received. The 93% response rate led the researchers to place high confidence in the representativeness of the results and non-respondents were not studied. Data were analyzed with appropriate measures of central tendency, dispersion and correlation for the scale of measurement.

RESULTS AND CONCLUSIONS

A summary of the demographic data revealed that 63% of the superintendents administered programs of adult vocational agriculture. They had been a superintendent for an average of over eight years, with an average of 21 years in education, and an average of eight years experience with adult vocational agriculture. Less than five percent had been an instructor of vocational agriculture, or an instructor of vocational education. Nearly 44% had been an adult instructor. Twenty-nine percent had taken coursework in vocational education and 42% had taken coursework in adult education.

To facilitate discussion, the items on the questionnaire have been grouped in Table 1. The clustering has been done under the headings of Need for the Program, Funding of Programs, Operation of Programs, Benefits of Programs, and Leadership Organization. These clusters were not grouped as domains for analysis purposes but for ease of interpretation.

Table 1

Attitudes of Superintendents toward Adult Education

Items in Cluster	Mean[a]	S.D.
Need for Programs		
Agriculture is of little importance within our school district. (reversed)[b]	3.90	0.30
Adults want additional information dealing with agriculturally related subjects.	3.24	0.49
Adult programs should be available to everyone within the school district.	3.22	0.62
A comprehensive high school's main responsibility is to students in grades nine to twelve.	3.17	0.67
Adult programs are the responsibility of the joint vocational school system; not the comprehensive high school. (reversed)	2.94	0.75
Adult programs should serve the agribusiness owners and employees.	2.86	0.49
Adult programs should be offered by every comprehensive high school offering vocational agriculture.	2.68	0.63
Adult programs in agriculture should try to serve the non-agriculture public.	2.61	0.69
When adults have educational needs, it is the school's responsibility to meet those needs with an educational program.	2.57	0.73
Adult programs should be the responsibility of the Ohio Cooperative Extension Service.	2.51	0.89
Adult programs should be geared toward retraining the unemployed for agricultural occupations.	2.33	0.63
Funding of Programs		
All consumable supplies that are used in the adult programs should be purchased by the adults.	3.27	0.64
Adult students should pay a fee to cover all costs of the educational program.	2.94	0.67
Our country has a free education system and that right extends to adults.	2.20	0.77
State and national funding for adult agricultural programs is adequate.	2.00	0.60
Adult programs should be self-supporting and use no local tax dollars. (reversed)	1.72	0.86
Operation of Programs		
The use of school facilities for adult programs during hours that school is not in session is acceptable.	3.37	0.49
The Ohio State Department of Education personnel encourages the conduct of adult programs.	3.29	0.46

Table 1 (continued)

Items in Cluster	Mean[a]	S.D.
Operation of Programs (continued)		
Adult programs should be operated with the assistance of a vocational agriculture advisory committee.	3.08	0.54
Current vocational agriculture instructors do not want to teach adult programs. (reversed)	3.04	0.52
The administrative duties inherent with adult programs make them unrealistically burdensome to the comprehensive high school administrator. (reversed)	2.94	0.71
Vocational agriculture instructors do not have the time to teach adult programs. (reversed)	2.68	0.53
Adult programs should be intensive, in-depth educational programs if adults are to benefit from them.	2.57	0.65
The use of school facilities during regular school hours for adult programs is acceptable.	2.27	0.75
Adult programs should be conducted by someone other than the high school vocational agriculture instructor.	2.26	0.74
Benefits of Programs		
Having adult programs in the school improves the community attitude toward the school.	3.34	0.47
Adult programs provide excellent public relations for schools.	3.19	0.47
Adult programs can have an observable impact on local agricultural practices.	3.03	0.30
Adult programs produce no financial benefit for the students. (reversed)	3.03	0.55
In an election year, an adult class will have a positive effect on any school issue that is on the ballot.	3.00	0.64
Adults, who have participated in adult programs, become strong school supporters.	3.00	0.60
Vocational agriculture instructors become better teachers after they have taught adult programs.	2.91	0.46
Leadership Organization		
Organizations like the Ohio Young Farmers Association are of great benefit to the adult student.	3.31	0.47
Organizations like the Ohio Young Farmers Association are of little benefit to the school system. (reversed)	3.22	0.48

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[a] SA - strongly agree (4)
A - agree (3)
D - disagree (2)
SD - strongly disagree (1)

[b] Scaling of negatively worded items was reversed for analyses and comparative purposes.

Examination of the results from the items on the questionnaire help describe their attitudes (Table 1). For example, superintendents agreed that 1) agriculture was important in their districts, 2) schools should offer instruction in agriculture to anyone who wishes to attend, 3) local programs should not necessarily be free to participants, 4) vocational agriculture instructors should serve as the teachers, 5) school facilities should be available, 6) advisory committees should be utilized, 7) the state department is supportive of adult vocational agriculture, and 8) such programs benefit the teacher, community, school and students. Each item can be considered independently.

One open-ended item on the questionnaire requested the superintendents to indicate their perception of the ideal funding for adult agricultural education programs. Their mean response was 47% should come from state and federal sources, 47% from student fees and six percent from local funds. Therefore, while their attitudes seem positive, they were reluctant to support the program with local monies. The question remains that, if attitudes are predispositions to behavior (Summers, 1970), will superintendents behave in a manner conducive to encouraging the support of adult agricultural education programs with local dollars?

Perusing Table 1, and utilizing 2.5 as the midpoint between agreeing and disagreeing, one can conclude that superintendents were in agreement with a majority of the items. One can further conclude their attitudes were positive overall.

Concepts with which they disagreed include retraining the unemployed, free education for adults, adequacy of state and national funding, utilizing local tax dollars for support, utilizing school facilities during regular school hours, and adult instruction being conducted by someone other than the vocational agriculture instructor.

High mean ratings were prevalent in the clusters of Need for Programs, Benefits of Programs, and the Leadership Organization. One can conclude that the attitudes of Ohio superintendents are positive in regard to the adult program being needed, the benefits derived and in the efficacy of the Young Farmers Association.

Table 2

Correlation of Superintendents' Attitude With
Selected Demographic Characteristics

Characteristic	Pearson Correlation Coefficients
Existence of Adult Vocational Agriculture	.06
Years of Experience as Superintendent	- .002
Years of Experience in Public Education	- .05
Years of Experience with Adult Vocational Education	.08
Previous Teacher of Vocational Agriculture	.09
Previous Teacher of Vocational Education	.08
Previous Teacher of Adult Education	.18
Coursework taken in Vocational Education	- .12
Coursework taken in Adult Education	- .05

Addressing Question 2, the examination of the relationship between the attitudes of superintendents and the demographic characteristics produced low and negligible relationships (Table 2). These characteristics were not good predictors of the attitudes of the superintendents, and failed to help explain the variability within the group. The correlation of greatest magnitude was between attitudes and experience as a teacher of adult education. This correlation (.18) was positive but of low magnitude.

RECOMMENDATIONS

1. Superintendents of Ohio's comprehensive high schools are conceptually supportive of adult vocational agricultural education; therefore, this finding should be shared with the profession.

2. Funding for adult programs should be arranged from a variety of potential sources; therefore, a study should be conducted to determine the optimum mix of support.

3. Program planning for adult education should be guided by an advisory council.

4. Instruction should be planned and delivered by the teacher of vocational agriculture.

5. The characteristics examined were not good predictors of the attitudes of the superintendents; therefore, other predictors should be examined in future studies.

6. Superintendents believed that agribusiness persons should be served as well as production agriculturalists; therefore, future policies should facilitate such programs.

7. Similar studies should be conducted in other states and with other populations such as superintendents of Ohio joint vocational schools, teachers, advisory council members, other administrators, and current and prospective students.

8. Future studies should investigate the relationship between the attitudes of superintendents and the quality of the adult program in their system.

9. Ohio educators should utilize these results as input to expanding and improving adult education programs in agriculture through revised recommendations for policies and procedures in comprehensive high schools.

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PERCEPTIONS OF AGRICULTURAL EDUCATION PROGRAMS: DIFFERENCES AMONG SATISFIED/DISSATISFIED STUDENTS

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INTRODUCTION

Many young people enter secondary schools already turned off by the learning process. Motivating students not only to do better, but to remain in school is a critical task for educators. Vocational education is frequently the catalyst that reawakens students' interest in school (National Commission on Secondary Vocational Education, 1984). It is, therefore, important to understand student perceptions of vocational education and what these perceptions say about the efficacy of vocational instruction.

Some progress toward such an understanding has been made through research efforts in the area of school effectiveness. Several common elements or characteristics of effective schools have thus been identified although there is much still to be done. A recent review and synthesis of this research aligns these characteristics along three dimensions: leadership, efficacy, and efficiency (Mackenzie, 1983). While the leadership dimension has to do with district and or school level implementation, the remaining dimensions focus on classroom or program implementation. Interaction between students and teachers, instructional expectations of students and teachers, teacher conveyance of minimum competency expectations, classroom environments, and cooperative activity are some characteristics of the latter two dimensions (Edmonds, 1982; Mackenzie, 1983; and Purkey & Smith, 1982).

While the primary focus of such research continues to be the effect of schooling on the learning process and student achievement, a secondary focus could well be the effect of various elements of the schooling process on student perceptions of their education. In their review of the school effectiveness literature, Purkey and Smith (1982) discuss the theory that student achievement is influenced by factors referred to as social inputs, social structure, and social climate. In other words, the composition of the student body, the environment of the classroom, and students'/staff expectations and feelings about the school interact to create an effective or ineffective learning process. Given the increasing concern with the condition of vocational education and its role in secondary schools, vocational educators should consider this literature in their attempts to improve their programs (Strickland & Burge, 1985).

PURPOSE AND OBJECTIVES

The purpose of this research was to determine those program elements which influence satisfaction with schooling among students enrolled in programs within one service area of vocational education--agricultural education. Although the relation between student satisfaction and student achievement was not examined directly in this research, it was proposed that those factors which contributed positively or negatively to student satisfaction might also have similar effects on student achievement. Thus, the findings of this research serve as a base for further research on student achievement and development in agriculture programs.

Specifically, the objectives of this research were:

(1) to identify and operationalize elements of program effectiveness based on findings from previous research on school effectiveness and on an ongoing evaluation program in one state;

(2) to examine the effects of program elements on student satisfaction using multiple linear regression techniques; and

(3) to compare these regression effects across several individual agriculture programs.

Since this research focuses on student perceptions of their agriculture program, most school effectiveness elements except those in what Mackenzie (1983) calls the leadership dimension are applicable. The program dimensions identified for this study were based on a previous research effort (Strickland & Burge, 1985) and include the following: perceptions of instruction (INSTR); adequacy of program environment (ENVIR); and, supplements to program process (SUPLM). The remainder of this section provides a brief description of the elements distinguishing the three program dimensions examined in this study.

Perceptions of Instruction

The supporting elements used to define this factor focus directly on the students' perceived achievement of skills and knowledge and the role of the teacher in facilitating this achievement. According to Mackenzie (1983), an effective learning process depends not only on student-teacher interaction but also on the teacher's ability to manage the instructional task. Bloom (1976) supports the importance of this dimension, suggesting that students' satisfaction with learning and with themselves as learners are useful indicators of successful schooling. To the extent schooling can facilitate students' satisfaction with learning, the learning process, and themselves, then to that extent is the schooling process more effective. While implementation in this regard can be difficult given the group setting of the school, it is likely that systematic means can be identified to alter overall student satisfaction.

Adequacy of Program Environment

Characteristics of this dimension have more to do with how learning materials and classroom conditions support instructional activities. It has been shown that an orderly, safe environment conducive to teaching and learning is essential to effective schooling (Edmonds, 1982; Mackenzie, 1983). This is not to say that increased supplies and larger/more extensive physical facilities guarantee an effective learning process--rather, that the lack of resources or adequate conditions may raise barriers to the delivery of effective instruction.

Supplements to Program Process

Included in this dimension are those activities that combine instructional focus with responsiveness to individual needs. While co-curricular activities and career/guidance counseling have not been expressly incorporated into the literature on effective schooling, characteristics deriving from these activities are. The major intent of vocational student organizations is to provide co-curricular activity. In other words, through these co-curricular activities, students become involved in group learning tasks and cooperative activities which contribute to the enthusiasm generated in the learning situation. At the same time, it must be recognized that these activities present situational factors that may influence program effectiveness either positively or negatively.

METHODS

Data Collection

The student data for this study were collected through the 1984-85 administration of VEEVA (Vocational Education Evaluation in Virginia). For the thirty-two school divisions included in this evaluation cycle, all senior high school students enrolled in upper-level vocational education courses were asked to complete a student questionnaire in the spring of 1984. The total number of students surveyed was 13,220, with 654 of these students being enrolled in upper-level agriculture programs.

The VEEVA Student Questionnaire used in this survey allowed students to rate their perceptions of various aspects of their vocational programs. The thirteen item survey utilized a self-report format having the following Likert-type response categories: 1 = poor; 2 = fair; 3 = good; and 4 = excellent. The items were developed based on state/national standards established to provide quality vocational education. Face validity was determined by a panel of vocational teachers and university vocational faculty who screened the questions during the development stage.

Data Analysis

A factor analysis using unweighted least squares factor extractions and a varimax rotation was performed on the total pool of agriculture student responses to the twelve survey items related to program specific elements (SAS, 1981). The analysis verified the factor structure of the questionnaire items as determined through previous survey administrations. To quantify each factor, individual student responses to the items which comprised that factor were summed, producing a set of total scale scores for each factor. The mean score for each factor was subsequently produced by averaging the summated scores across the number of students responding to the respective items. Table 1 presents the distribution of items to illustrate factor content and the Cronbach alpha associated with each group of items. A corresponding alpha of 0.84 was obtained for the student survey instrument as a whole.

Multiple linear regression analysis was used to determine the effects of the three program factors or elements (INSTR, ENVIR, SUPLM) on student satisfaction. A general functional model was used across two stages of analysis to allow comparison of regression effects at the overall vocational service level and the individual program level. While the overall impact of program elements at the service level is informative in identifying areas of concern or potential, the differential composition of the separate agriculture program offerings requires examination at this level as well.

The measure of student satisfaction (SAT) was derived using student responses to the survey item requesting students to rate their overall satisfaction with their agricultural program. This item was scaled in the same manner described above for the other survey items. The raw score for this item was used to operationalize this variable. Means and standard deviations for both the dependent and independent measures are presented in Table 2.

RESULTS

Regression analysis was performed using the REG procedure from SAS (1981). Results for the service level and program level analyses are presented in Table 3. For the service level model, statistically significant results were obtained for all three program elements. Items concerned with instruction and student achievement appear to have the greatest influence on satisfaction. This finding agrees with previous research demonstrating that student-teacher interaction and reward for achievement are good indicators of student success (Bloom, 1976; Mackenzie, 1983). While the physical conditions and actual materials used in programs are important to students, activities supplemental to instruction are more influential. The latter finding may also indicate the importance co-curricular activities play in students' involvement and development in agriculture programs. This finding supports the notion that "vocational student organizations are integral to motivating students" (National Commission on Secondary Vocational Education, 1984).

Table 1

Student Questionnaire Factors and Alpha Coefficients

Factors and Defining Items	Alpha
Factor 1 - Satisfaction with Instruction (INSTR)	.80
Individual attention you received from teachers	
Teacher's description at beginning of school of work required for this course	
Your increase in knowledge about this voc. area	
Your increase in skills in this voc. area	
Factor 2 - Perception of Program Environment (ENVIR)	.77
Tools and equipment for student use	
Up-to-date learning materials (books, guides, etc.)	
Condition of lab or work area	
Enough supplies (things that get used up, such as lumber, duplicating paper, welding rods, etc.)	
Factor 3 - Supplemental Activities (SUPLM)	.66
Career counseling by teacher about jobs in this vocational area	
Interest and enthusiasm of students about their voc. organization (AIASA, DECA, FBLA, FFA, FHA/HERO, HOSA, & VICA)	
Visits to your class by persons employed in jobs related to this course	
Career counseling by guidance counselors about different kinds of jobs	

Table 2

Descriptive Statistics by Overall Service and Program Levels

Program Grouping	SAT	INSTR	ENVIR	SUPLM
Overall Service				
M	3.29	3.22	2.83	2.57
SD	0.73	0.57	0.74	0.66
Agriculture Business				
M	3.16	3.14	1.77	2.22
SD	0.51	0.46	0.71	0.53
Agriculture Mechanics				
M	3.36	3.28	3.08	2.72
SD	0.72	0.64	0.64	0.74
Agriculture Production				
M	3.28	3.19	2.74	2.59
SD	0.72	0.52	0.73	0.64
Horticulture				
M	3.28	3.24	3.03	2.51
SD	0.78	0.62	0.62	0.66

Table 3

Summary of Regression Results by Service Level and Individual Program

Program Grouping	INSTR	ENVIR	SUPLM	R^2	df
Overall Service	0.633**	0.077**	0.287**	0.53	642
Agriculture Business	0.347*	-0.011	0.568**	0.61	31
Agriculture Mechanics	0.678**	0.064	0.246**	0.68	105
Agriculture Production	0.558**	0.067	0.385**	0.49	320
Horticulture	0.734**	0.175*	0.104	0.54	185

* Significant at $p < 0.05$
**Significant at $p < 0.01$

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Results for the program level models differ somewhat and certainly qualify the findings obtained in the overall service model. For agriculture business, it was found that intruction and supplemental activities were significant elements of student satisfaction within this program. Unlike the overall service model, however, supplemental activities appear to be more influential than instructional interaction. A surprising finding in this program was the negative, although nonsignificant, effect of environmental factors. This may indicate the increasing need for advanced business related equipment in these programs--equipment which is expensive and highly desired by non-agriculture programs, thus limiting the availability of such equipment for the agricultural business program. On the other hand, results for this program may be an artifact of the low number of respondents--a problem not shared among the remaining programs.

Agriculture mechanics and agriculture production programs more closely resemble the overall service model, but like agriculture business, the environmental factors proved to be nonsignificant. Instructional elements proved to be the most important in contributing to student satisfaction, with supplemental activities contributing comparatively less.

Horticulture programs differed most from the overall service model and the other individual program models in their results. A common finding was the priority of intructional activities in significantly contributing to positive perceptions of agriculture programs. However, items related to environmental factors proved to be the second most important element related to student perceptions. Supplemental activities were positive, but did not have a significant effect according to the results of this research.

The explanatory power of these models proved to be acceptable in most cases. The functional form of the models appeared to be particularly appropriate for the agriculture mechanics program, and least appropriate for the agriculture production programs. Nevertheless, the multiple correlations for the separate models were high and showed relative goodness-of-fit for the purposes of this research.

DISCUSSION

While the results of this research are in agreement with that implied through the school effectiveness literature, one new aspect of effectiveness has been indicated. The introduction of co-curricular activities and guidance/counseling functions in this research reflects significant areas of influence which have been largely unexamined in previous school effectiveness research. While the guidance/counseling activities are outside the immediate instructional focus, such activities and/or co-curricular organizations do affect students' overall satisfaction with the educational process. To the extent that these external activities affect students negatively, then to that extent might students enthusiasm or interest in their program be affected. This is certainly an area for further research.

More indepth research is needed in determining the factors and their effects on student satisfaction across the different programs in agriculture as well as all areas of vocational education. Such research including external activities and co-curricular organizations, would add greatly to the body of knowledge on school effectiveness, especially as it relates to vocational education.

In general, it appears that agriculture educators in this state are doing a good job. Good instruction is being provided, teachers have established rapport with their students, and students are achieving their educational goals. Although these are important influences on student satisfaction and, hence, on student achievement, educators need to reconsider the attention they give to development of supportive, external activities.

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DISCUSSION OF RESEARCH ON PROGRAM PERCEPTIONS
NATIONAL AGRICULTURAL EDUCATION RESEARCH MEETING
ATLANTA, GEORGIA
December 6, 1985

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The three research reports in Concurrent Session G have provided us with program perceptions from the standpoint of administrators, teachers, and students. These studies address problems which are significant to agricultural education and they make a contribution to knowledge about agricultural education. The authors are to be commended for conducting the research and sharing the results with a national audience.

In my discussion of the reports, I plan to comment on them in the order they were presented. I would encourage the authors to consider submitting their work to appropriate journals for possible publication.

TOPIC I: VOCATIONAL AGRICULTURE TEACHERS' PERCEPTIONS OF YOUNG/ADULT EDUCATION PROGRAMS IN AGRICULTURE

Douglas M. Haynes and Michael F. Burnett

Strengths

1. The specific objectives of the study were clearly stated.
2. Content validity of the instrument was established through the use of a panel of experts and instrument reliability was determined through the use of Cronbach's alpha.
3. A sample of nonrespondents was followed up and the results were compared with the respondents to determine if differences existed.
4. The results were clearly presented.
5. The problem associated with using multiple $\underline{t}$ tests and the accompanying inflation of the experimentwise error rate was recognized (see Oliver & Hinkle, 1981, for a discussion of the multiple comparisons problem).
6. The paper was well-written and the suggested format was followed.

Suggestions for Improvement

1. Factor analyze the instrument to determine the underlying

constructs and use the factors in determining the differences in perceptions between teachers with young/adult programs and those without young and adult programs. This is one approach recommended to resolve the multiple comparisons problem (Oliver & Hinkle, 1981).

2. Provide the rationale for selecting four states from which the sample was drawn. In future studies, consideration should be given to sampling teachers from all states in the region. This could be accomplished by obtaining the directories of teachers in all the states and using a systematic sampling procedure to select the teachers in the sample. It would be helpful to state the assumptions underlying the Krejcie and Morgan sampling table used in determining the sample size.

3. Avoid using the symbol _r_ to refer to Cronbach's alpha--this symbol is normally used to refer to a correlation coefficient.

4. Provide a stronger rationale for transforming the participant's response to a 0 to 16 certainty scale. Is there support in the literature other than the one source noted?

5. Strengthen the conclusions. At present, they tend to be a restatement of the findings.

6. Base the recommendations more closely on the results and conclusions of the study.

Suggested Applications/Implications

1. If the teachers in general perceived that vocational agriculture should have some responsibility for young/adult education programs in agriculture, perhaps research is needed to determine why only about 50% of the teachers actually conducted such programs.

2. Since teachers who had conducted young/adult education programs perceived a higher level of responsibility for vocational agriculture teachers in this area, perhaps student teachers should only be placed in schools with young/adult programs if the goal is to increase the number of such programs.

TOPIC II: ATTITUDES OF SUPERINTENDENTS OF OHIO COMPREHENSIVE HIGH SCHOOLS TOWARD ADULT PROGRAMS

Larry E. Miller and Thomas L. Krill

Strengths

1. The introduction develops the problem and leads into a statement of the problem.

2. The problem and research questions are clearly stated and the research questions are capable of being answered.

3. The review of literature is a concise synthesis of related research.

4. Appropriate procedures were used to establish validity and reliability of the instrument.

5. The paper was well-written and the suggested format was followed.

Suggestions for Improvement

1. Provide information on the effect size or degree of accuracy associated with the sample size used. As has been noted (Hinkle, Oliver, & Hinkle, 1985), the effect size is a primary consideration in determining the sample size.

2. In future studies of this nature, consider selecting a sample sufficiently large to permit the following:

    a. A factor analysis of the attitude instrument to discover the underlying constructs. According to Gorsuch (1974), "A present suggested absolute minimum ratio is five individuals to every variable, but not less than 100 individuals for any analysis" (p. 296).

    b. The use of multiple correlation procedures in the data analysis.

3. Exercise care in interpreting the nine correlation coefficients. It should be noted that the authors did not test the correlation coefficients for statistical significance. If such tests are made and if the demographic characteristics are intercorrelated, the multiple comparisons problem should be addressed (Oliver & Hinkle, 1981).

TOPIC III: PERCEPTIONS OF AGRICULTURAL EDUCATION PROGRAMS: DIFFERENCES AMONG SATISFIED/DISSATISFIED STUDENTS

Deborah C. Strickland and Donald E. Elson

Strengths

1. The purpose and objectives of the study are clearly stated.

2. The review of literature is a concise synthesis of related research.

3. Appropriate procedures were used to establish face validity and reliability of the instrument.

4. The instrument was factor analyzed to determine the underlying constructs or factors which were then used as independent variables in the regression analysis.

5. The paper was well-written.

Suggestions for Improvement

1. Provide an explanation of how the 32 school divisions were selected for inclusion in the study.

2. Provide a more detailed description of the factor analysis procedure used.

3. Exercise care in discussing nonsignificant results.

4. Confine the discussion to the results of the study. It appears that the last paragraph of the discussion section goes beyond the results of the research.

5. Change the title to indicate that the study dealt with relationships rather than differences.

6. In future studies, consider using a more adequate measure of the dependent variable student satisfaction. The validity and reliability of a one-item variable is of concern, especially since student satisfaction tends to be a complex construct.

Suggested Applications/Implications

To reinforce what the authors stated, co-curricular activities and guidance/counseling functions represent significant areas of influence on student satisfaction with the educational process. Perhaps agricultural educators need to reconsider the attention they give to the development of these areas of influence.

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EARLY FIELD BASED EXPERIENCE PROGRAMS AND ATTITUDES OF PRE-SERVICE TEACHERS

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INTRODUCTION

Early field-based experiences in education are activities in teacher preparation that occur away from the university, with students or school personnel, that are separate from and prior to student teaching (Elliott, 1978; Webb, Gehrke, Ishler & Mendoza, 1981). A broad rationale has been developed for early field-based experience, but the two reasons most commonly proposed are: (a) to allow students to make an informed career choice; and (b) to allow pre-service teachers to try on the role of teacher (Reed & Hill, 1981; Elliott & Mays, 1979; Boucher, 1978).

Austin-Martin, Bull and Molrine (1981) indicated that there is a scarcity of research studies examining the effectiveness of pre-student teaching experiences. Applegate and Lasley (1983) supported that contention, stating that most investigations regarding field experiences have been directed at student teaching.

Researchers have found both positive and negative attitudes toward teaching as a result of early field-based experiences (Knoll, 1973; Zeichner, 1980). Several factors may influence the development of student attitudes toward themselves as teachers and toward teaching vocational agriculture (Deeds, 1985). Those factors may include previous experience in vocational agriculture and related activities, grade-point average and year in school, among others.

Zeichner (1980) indicated that few researchers have actually looked at what really takes place during the early field-based experience. A question that should be asked in teacher education concerns what constitutes a good experience and/or good placement for an individual (Beacher & Ade, 1982). Most early field-based experience students are given a number of assignments to complete during the experience that emulate the professional activities of teachers. The extent and depth to which these experiences are being completed has not been well documented.

PURPOSE AND OBJECTIVES

The purpose of the study was to examine the experiences completed during the early field-based experience program and the attitudes of participants toward themselves as teachers and toward teaching. The following research questions were addressed:

1. What was the extent and type of professional activities completed by participants during early field-based experience?

2. What was the relationship between the extent of professional activities completed and the attitude of participants toward themselves as teachers and toward teaching vocational agriculture?

3. What was the relationship between the extent of professional activities completed and selected demographic variables (years of high school vocational agriculture, extent of participation in FFA and Agricultural Education Society, and university rank and GPA)?

4. What was the relationship between the extent of professional activities completed and the conditions of the experience (cooperating teacher attitude toward teaching vocational agriculture and perceived program quality)?

PROCEDURE

The study was designed as descriptive survey research of a comparative nature. The characteristics of interest included demographic data pertaining to the participants and their early field-based experiences, attitude of the participants and conditions of the early field-based experience.

Population

The population for the study consisted of 23 undergraduate students at The Ohio State University who were self-selected into Agricultural Education 280.01 (Early Field-Based Experience) Autumn Quarter, 1984 and had completed Agricultural Education 200 (Introduction to Agricultural Education) at the Columbus campus. The entire population participated in the study.

Instrumentation and Data Collection

The data for the study were collected via five researcher-developed instruments. The Professional Activities Completed instrument was an interview schedule consisting of 25 questions on a six-point scale (see Table 1) and two subjective questions used by the researcher to collect data regarding what activities were completed and to what depth the experiences were completed. The researcher conducted the interviews when the pre-service teachers returned to campus. The second instrument developed to measure attitude used a semantic differential scale to determine Attitude Toward Self as a Teacher. The third instrument included a four-point Likert-type scale to determine the Attitude Toward Teaching Vocational Agriculture. Both of these instruments were completed by the pre-service teachers during an appointment with the researcher prior to the interview. Cooperating teachers received the same Attitude Toward Teaching instrument by mail after the early field-based experience was completed.

The fourth instrument was a Participation Inventory for high school FFA and university Agricultural Education Society participation and was completed at the post early field-based experience seminar. Other demographic data were collected from university and department records. The Perceived Program Quality was determined by a seven-point scaled instrument (the fifth instrument) designed to evaluate vocational agriculture program components and appropriateness of the program for an early field based experience site. The instrument was completed by the 1983-1984 Ohio Joint Agricultural Education Staff.

Instruments designed to measure attitude were pilot tested and field tested for reliability and validity. Reliability coefficients were computed to be .71 for the attitude toward myself as a teacher instrument and .91 for the attitude toward teaching instrument using Cronbach's alpha estimate of reliability. All instruments were determined to have content validity by a panel of experts.

RESULTS

The scores for the extent of Professional Activities Completed were reported as total scores and used as ordinal data in determining correlations. During the interview, subjects responded to 25 possible activities and assignments that were rated from 0 (did not complete) to 5 (in-depth participation). Although the responses were rated ordinally, the high score was not necessarily the optimum response. For example, Question 11 on the interview schedule (see Table 1) concerned participation on the SOE program. The response valued at 5 was "Made SOE visit alone," an activity not necessarily considered appropriate for early field-based experience participants. The various depth of participation levels were included in an effort to determine what the pre-service teachers actually did during the experience, even though the highest involvement would not be encouraged for early field-based experience students.

The highest score possible on the interview schedule would have been 125 points. The scores on professional activities completed varies from a low of 40 to a high score of 86.

Findings from the study are presented in four parts, based on the research questions:

Question One--The mean score for the extent of professional activities completed by the participants was 57.6 points with a maximum of 125 possible. Over 30% had scores between 40 and 49, 39.1% scored between 50 and 59, 8.7% achieved scores between 60 and 69, 17.4% of participants had scores between 70 and 79, and 4.3% had an extent of professional activities score over 80 (Table 2).

Question Two--A low association existed between the extent of professional activities completed and participants' attitude toward teaching vocational agriculture (r = .28) and attitude toward themselves as teachers (r = .21) (Tables 3 & 4).

Question Three--Negligible relationships existed between the extent of professional activities completed and the selected demographic variables: years of high school vocational agriculture (r = .04); extent of FFA participation (r = .04); extent of AES participation (r = -.01); university GPA (r = -.03); and university rank (r = -.06) (Table 5).

Question Four--A moderate relationship existed between the extent of professional activities completed and the conditions of the experience: cooperating teachers' attitude toward teaching vocational agriculture (r = .34); and perceived program quality (r = .37) (Table 5).

CONCLUSIONS AND/OR RECOMMENDATIONS

The experiences completed were extremely varied, from a minimal experience for some participants to other participants completing activities that would not be expected of this experience. The attitudes of pre-service teachers toward teaching or toward themselves as teachers are not related to the extent of professional activities completed during early field-based experience according to the data. What actually happens during the experience, measured by the extent of professional activities completed, had a low association with the attitude of pre-service teachers. The interviewer found that the experience varied greatly from strictly observation to substitute teaching with no supervisor present. The extent of activities completed seemed to have more association with the enthusiasm of students about teaching during the interview than was reflected by the attitude scores.

The data collected indicated that the extent of professional activities completed is independent of previous agricultural education related activities. Enrollment in high school vocational agriculture, participation in FFA and participation in the Agricultural Education Society in college were not associated with more active or indepth experience.

A specific early field-based site selection procedure should be developed to help insure the exposure of pre-service teachers to high quality, programs including typical criteria such as course of study, facilities and equipment, supervised occupational experience programs, FFA and perceived teaching ability of the cooperating teacher. An additional criterion for selection should be a positive attitude toward teaching on the part of the cooperating teacher. Yee (1969) indicated that teacher education programs should continue to improve the conditions under which student teachers are influenced by their cooperating teacher; the same should be true for early field-based experience.

The researchers would recommend a committee be formed to review early field-based experience assignments and develop expectations for the experience in light of the data reported on the extent of professional activities completed. The assignments should be representative of the professional activities that are appropriate for the pre-service teacher to try on the role of the vocational agriculture teacher. The expectations should be realistic for the time of year the experience is completed (deleting those activities not normally conducted during the first three weeks of school). The activities to be completed should serve as a foundation for future course work. The assignments and expectations should then be clearly articulated to both cooperating teachers and early field-based experience participants.

Table 1

Responses to Individual Interview Schedule Items

Item	Response Category	Value	f
1. Were you involved in lesson planning during the experience?	Not at all	0	0
	Observed once	1	1
	Observed more than once	2	3
	Assisted once	3	2
	Assisted more than once	4	2
	Prepared alone	5	15
2. Were you involved with working with individual students in the classroom?	Not at all	0	5
	Observed once	1	2
	Observed more than once	2	2
	Assisted once	3	0
	Assisted more than once	4	0
	Worked with individuals alone	5	14
3. Were you involved in working with small groups in the classroom?	Not at all	0	13
	Observed once	1	0
	Observed several times	2	1
	Assisted once	3	2
	Assisted more than once	4	2
	Taught the small group alone	5	5
4. Were you involved in working with the whole class in the classroom?	Not at all	0	0
	Observed once	1	0
	Observed several times	2	0
	Assisted once	3	1
	Assisted more than once	4	2
	Taught the whole class alone	5	20
5. Were you involved in working with individual students in the shop/laboratory?	Not at all	0	4
	Observed once	1	1
	Observed more than once	2	0
	Assisted once	3	0
	Assisted more than once	4	4
	Worked with individual students alone	5	13

(*table continues*)

Item	Response Category	Value	f
6. Were you involved in working with small groups of students in the shop/laboratory?	Not at all	0	10
	Observed once	1	0
	Observed more than once	2	1
	Assisted once	3	1
	Assisted more than once	4	3
	Taught small groups alone	5	8
7. Were you involved in teaching the whole class in the shop/laboratory?	Not at all	0	7
	Observed once	1	1
	Observed more than once	2	7
	Assisted once	3	1
	Assisted more than once	4	3
	Taught the whole class in the shop/laboratory	5	6
8. Were you involved in working with audio-visual equipment experience?	Not at all	0	0
	Observed it used once	1	2
	Observed its use more than once	2	1
	Assisted in its use once	3	2
	Assisted in its use more than once	4	2
	Set up and used the equipment alone	5	16
9. Were you involved in the selection or development of audio-visual materials during your experience?	Not at all	0	4
	Observed AV mat'l selection/development once	1	1
	Observed AV mat'l selection/development more than once	2	0
	Assisted in mat'l selection/development once	3	1
	Assisted in mat'l selection/development more than once	4	2
	Selected/developed materials alone	5	15
10. Did you take part in student evaluation and grading?	Not at all	0	1
	Observed only	1	1
	Recorded grades	2	0
	Graded tests/papers once	3	3
	Graded tests/papers more than once	4	2
	Developed and graded tests/papers	5	16
11. Did you participate in the supervised occupational experience programs?	Not at all	0	6
	Observed SOE visit	1	2
	Observed SOE visits more than once	2	3
	Assisted with SOE visit once	3	2
	Assisted with SOE visit more than once	4	4
	Made SOE visit alone	5	6

(table continues)

Item	Response Category	Value	f
12. Did you work with students on SOEP planning?	Not at all	0	8
	Observed SOE planning once	1	4
	Observed SOE planning more than once	2	1
	Assisted with SOE planning once	3	1
	Assisted with SOE planning more than once	4	0
	Worked alone with students on SOE planning	5	9
13. Were you involved with students and recordkeeping for SOE's?	Not at all	0	8
	Observed recordkeeping once	1	4
	Observed more than once	2	1
	Assisted with recordkeeping once	3	1
	Assisted with recordkeeping more than once	4	0
	Worked alone with student on recordkeeping	5	9
14. Did you confer with counselors or school specialists concerning special needs students?	Not at all	0	1
	Discussed with cooperating teachers	1	0
	Discussed with counselor/specialists	2	3
	Developed a list of special needs students	3	7
	Discussed an individual student with the counselor/specialist	4	12
	Developed an IEP for a special needs student	5	0
15. Were you involved with counseling students on personal matters or academics?	Not at all	0	7
	Observed counseling once	1	4
	Observed counseling more than once	2	3
	Assisted with counseling once	3	1
	Assisted with counseling more than once	4	2
	Counseled a student alone	5	6
16. Did you get involved with the FFA executive committee or Program of Activities?	Not at all	0	8
	Observed executive committee or POA committee	1	7
	Observed both committees	2	0
	Assisted with one meeting/activity	3	3
	Assisted with more than one meeting/activity	4	1
	Handled a meeting or activity alone	5	0
17. Did you work with FFA members other than officers?	Not at all	0	3
	Observed one meeting/activity	1	6
	Observed more than one meeting/activity	2	4
	Assisted with one meeting/activity	3	3
	Assisted with more than one meeting/activity	4	6
	Handled a meeting or activity alone	5	1

(table continues)

Item	Response Category	Value	f
18. Did you get acquainted with the department's equipment, records and filing system?	Not at all	0	0
	Reviewed alone	1	11
	Reviewed with cooperating teacher	2	6
	Assisted with records or filing once	3	1
	Assisted with records or filing more than once	4	3
	Recorded or filed materials alone	5	2
19. Were you involved in the department's adult/continuing education program?	Not at all	0	18
	Observed a meeting or planning session	1	4
	Observed more than one meeting or planning session	2	1
	Assisted with one meeting or planning session	3	0
	Assisted with more than one meeting or planning session	4	0
	Had major responsibility for a meeting or planning session	5	0
20. Were you involved in school or community activities outside the vo-ag department?	Not at all	0	8
	Observed activities once	1	6
	Observed activities more than once	2	6
	Assisted with other activities	3	0
	Assisted with other activities more than once	4	3
	Handled other activities alone	5	0
21. Were you involved with the advisory committee during your experience?	Not at all	0	23
	Observed committee activities once	1	0
	Observed committee activities more than once	2	0
	Assisted with committee activity once	3	0
	Assisted with committee activity more than once	4	0
	Handled a committee activity alone	5	0
22. Were you involved in program planning and/or development during your experience?	Not at all	0	9
	Observed program planning process once	1	12
	Observed program planning more than once	2	2
	Assisted with program planning once	3	0
	Assisted with program planning more than once	4	0
	Conducted program planning or development alone	5	0
23. Were you involved with the FFA alumni during your experience?	Not at all	0	18
	Observed a meeting or activity once	1	4
	Observed more than one meeting or activity	2	0
	Assisted with a meeting or activity	3	0
	Assisted with more than meeting or activity	4	0
	Handled a meeting or activity alone	5	0

(table continues)

Item	Response Category	Value	f
24. Did you participate in vo-ag teacher professional activities?	Not at all	0	0
	Observed a vo-ag teacher	1	16
	Observed more than one meeting or activity	2	7
	Participated in a vo-ag teacher meeting with coop teacher	3	0
	Participated in more than one meeting with coop teacher	4	0
	Attended a vo-ag teacher meeting or activity alone	5	0
25. Were you involved in the department's summer program?	Not at all	0	16
	Observed one event only	1	5
	Observed more than one event	2	1
	Assisted in one event	3	0
	Assisted with more than one event	4	1
	Handled one summer event alone	5	0

Table 2

Extent of Professional Activities Completed During Early Field-Based Experience

Extent of Activities Completed Score	Study Group f	Study Group %
40-49	7	30.5
50-59	9	39.1
60-69	2	8.7
70-79	4	17.4
80-89	1	4.3
Total	23	100.0
Mean 57.58		

Table 3

Relationship Between the Attitude of Pre-Service Teachers Toward Teaching Vocational Agriculture and the Extent of Professional Activities Completed

Professional Activities Completed	Pre-Service Teacher Attitude Toward Teaching low-2.79	2.80-2.99	3.00-3.19	3.20-3.39	3.40+
low-49	0	4	1	2	0
50-59	1	2	4	1	1
60-69	0	0	1	1	0
70-79	0	2	1	0	1
80-high	0	0	0	1	0
Total	1	8	7	5	2

Spearman rho = .28; n = 23

Table 4

Relationship Between the Attitude of Pre-Service Teacher Toward Themselves as Teachers and the Extent of Professional Activities Completed

Professional Activities Completed	Student Attitude Toward Self as Teacher						
	<5.25	5.25-5.49	5.50-5.74	5.75-5.99	6.0-6.24	6.25-6.49	>6.49
low-49	1	2	1	2	0	0	1
50-59	2	0	1	0	5	1	0
60-69	0	0	1	0	0	0	1
70-79	0	0	1	1	2	0	0
80-high	0	0	0	0	1	0	0
Total	3	2	4	3	8	1	2

Spearman rho = .21; n = 23

Table 5

Relationship Between Extent of Professional Activities Completed and Selected Variables

Variables	Relationship to Extent of Professional Activities Completed r
Demographic variables:	
Years of High School Vocational Agriculture	.04
Extent of FFA Participation	.04
Extent of AES Participation	-.01
University GPA	-.03
University Rank	-.06
Conditions of the Experience:	
Cooperating Teachers' Attitude Toward Teaching Vocational Agriculture	.34
Perceived Program Quality	.37

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ANALYSIS OF THE INSERVICE NEEDS OF BEGINNING VOCATIONAL AGRICULTURE TEACHERS

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INTRODUCTION

Inservice education programs have been developed and conducted in many states to assist beginning vocational agriculture teachers in becoming established in their positions. The University of Missouri-Columbia has conducted such a program for several years for first and second year vocational agriculture teachers. The program had traditionally focused on assisting beginning teachers with program and curriculum development activities and included group discussions focusing on specific problems facing the participants. However, there existed a need to identify priority areas of program and curriculum development to be addressed in the limited time available for inservice activities with beginning vocational agriculture teachers.

Research studies conducted in the past have identified problems of beginning vocational agriculture teachers. Kahler (1974) identified 187 activities that teachers could be expected to perform in their job as vocational agriculture teachers. In the study, Iowa vocational agriculture teachers were asked to rate the degree of importance and difficulty of the 187 activities identified. Kahler concluded that the needs of beginning teachers were found to be somewhat different than those of experienced teachers. However, Kahler also concluded that all teacher groups placed high priority on and expressed much difficulty with the program area entitled 'Classroom Teaching'.

Scheid (1982) identified activities that were the most and least difficult for teachers to perform. Scheid concluded that administering adult programs and developing cooperative relationships with faculty, administrators, and students as the two most difficult activities encountered by beginning vocational agriculture teachers.

Other studies have identified competencies needed by beginning vocational agriculture teachers. Witmer and Mortensen (1979) identified 107 professional education competencies that beginning vocational agriculture teachers should develop (Hawk, 1977; and Moore and Bender, 1975). These competencies were suggested to be included in the preservice teacher education program. Competencies not acquired at the undergraduate level were to be addressed through inservice programs for beginning vocational agriculture teachers.

Hachmeister (1981) identified the needs of beginning vocational agriculture teachers in Kansas. Curriculum and lesson plan development, time management, building student rapport, handling discipline problems, and improving teacher-administrator relations were identified as inservice priorities for beginning vocational agriculture teachers.

These and other studies have provided an indication of the inservice needs of beginning vocational agriculture teachers. However, more information was necessary to identify specific topics to address in beginning teacher inservice programs. More importantly, it was necessary to ascertain the needs which could be fulfilled through an inservice program as perceived by beginning vocational agriculture teachers.

PURPOSE AND OBJECTIVES

The central purpose of this study was to identify the inservice needs of beginning vocational agriculture teachers in Missouri. Conclusions and recommendations resulting from this effort were to be used to develop and conduct relevant inservice programs for beginning vocational agriculture teachers in future years.

Specific objectives developed to guide the activities of this study were outlined as follows:

1. To assess the level of job satisfaction of beginning vocational agriculture teachers.

2. To prioritize the inservice needs of beginning vocational agriculture teachers.

3. To identify relationships which may exist between perceived inservice needs and the personal and employment situational characteristics of beginning vocational agriculture teachers.

PROCEDURES

Design

The population for this study consisted of all (N = 52) beginning vocational agriculture teachers in Missouri during the 1984-85 school year. Beginning teachers were defined as those individuals who were employed in their first or second year of vocational agriculture teaching during the time specified above. Sampling procedures were not utilized as the entire population was surveyed.

Instrumentation

A survey instrument was developed asking beginning teachers to indicate their perceived need for assistance in 75 areas. Topics assessed were identified through a review of related research studies (Kahler, 1975; and Scheid, 1982). Respondents were asked to rate their perceived need for inservice training using a nine-point Likert-type scale. A response of 1 indicated no need; 5 indicated average need; and 9 indicated absolute need for inservice in each of the 75 topic areas identified. Respondents were also asked to provide information regarding their personal and employment situational characteristics.

University of Missouri-Columbia agricultural education faculty members reviewed the instrument for face and content validity and made suggestions for improvement.

Data Collection

Survey instruments were completed by each teacher attending a beginning teachers' class on the University of Missouri-Columbia campus in January, 1985. Beginning teachers not in attendance were mailed identical instruments and asked to return completed forms through the postal service.

Data Analysis

Completed instruments were numerically coded and key punched onto the University of Missouri-Columbia computer. Mean scores were computed for each of the 75 inservice topics identified in the instrument. Responses for each of the 75 inservice topics were collapsed into eight subscales. Subscale labels and the number of items (in parentheses) in each subscale were identified as follows: Program Development (18), Teaching Methods (10), FFA Involvement (6), SOEP Supervision(7), Adult Instruction (8), Skill Development (12), Agricultural Mechanics (6), and Public Relations (8). Subscale means were computed and used as a basis for subsequent data analysis. The a priori alpha level was established at the .05 level.

RESULTS

Instrument reliability was analyzed following data collection by computing a Coefficient alpha and was found to be .955 for the entire instrument. Individual subscale reliabilities ranged from .748 for the skill development subscale to .868 for the program development subscale.

Fifty-two beginning vocational agriculture teachers provided usable responses which resulted in a 100 percent rate of return. Table 1 reveals means and standard deviations for demographic variables collected as a part of the study.

Table 1

Means of Demographic Variables for Beginning Teachers

Demographic Variable	N	$\overline{X}$	S.D.
Age (years)	52	25.3	4.88
Vocational agriculture program enrollment (number of students)	51	59.7	32.51
FFA membership (number of students)	51	55.1	26.86
Young farmer membership (number of members)	15	22.2	9.78

Beginning teachers reported program enrollments of nearly 60 students and FFA membership totaling approximately 55 students. The average age of beginning teachers was reported to be 25.3 years. Fifteen beginning teachers reported having responsibility for Young Farmer program supervision which averaged slightly over 22 members each. It was also revealed that 73 percent of the beginning teachers were employed in a single teacher department with 51.9 percent having a B.S. degree, 28.8 percent a B.S. plus 15 hours, and 19.3 percent a M.Ed. or higher.

Other findings which were felt to be useful in interpreting results are included in Table 2. When asked to identify work responsibilities in addition to secondary teaching, beginning teachers reported that three (5.8%) were supervising Farm Business Management Analysis programs, five (9.6%) were coaching athletics, six (11.5%) taught junior high school pre-vocational classes, 11 (21.2%) were advising young farmer chapters, 14 (26.9%) conducted some type of adult education, 22 (42.3%) were involved in the instruction of special needs students, 35 (67.3%) were responsible for supervision of SOEP placement programs, and 43 (82.7%) had an active advisory committee. Each of the beginning teacher respondents reported involvement as the advisor to the local FFA chapter and in secondary vocational agriculture teaching.

Table 2

Number and Percentage of Beginning Teachers Reporting Responsibility for Selected Activities

Activity	Response Yes N	 %	 No N	 %
Teaching Secondary Vo. Ag.	52	100.0	0	0.0
Utilize an advisory committee	43	82.7	9	17.3
Jr. high pre-voc teaching	6	11.5	46	88.5
Young farmer classes	11	21.2	41	78.8
Adult farmer activities	14	26.9	38	73.1
SOEP placement coordination	35	67.3	17	32.7
Instructing special needs students	22	42.3	30	57.7
Coaching athletics	5	9.6	47	90.4
Advising FFA or PAS chapter	52	100.0	0	0.0
Farm business management analysis program supervision	3	5.8	49	94.2

An indication of the level of job satisfaction was revealed as 53.8 percent of the beginning teacher respondents reported they did not wish to eliminate anything from their current responsibilities. Some beginning teachers (19.2%) reported the desire to add young farmer instruction to their responsibilities, while 30.8 percent did not wish to add to their current duties. Activities which beginning teachers desired to add or eliminate are provided in Table 3.

Composite means were computed for each of the eight subscales previously identified. Table 4 presents rank ordered composite means and standard deviations for each subscale. Composite means calculated for each subscale were found to be within one standard deviation of the midpoint of the scale. Subscales for Skill Development and FFA Involvement produced the highest composite means whereas, the Public Relations and Teaching Methods subscales produced the lowest composite means.

Table 3

Number and Percent of Beginning Teachers Wishing to Add or Eliminate Activities from Their Employment Responsibilities

Activity	N	%
Add		
No activities identified	16	30.8
Young farmer activities	10	19.2
College or university teaching	7	13.5
Junior high/pre-voc. teaching	7	13.5
Adult farmer classes	4	7.7
FBMA program supervision	3	5.8
SOEP placement coordination	2	3.8
Coaching athletics	2	3.8
Secondary vo-ag classes	1	1.9
Totals	52	100.0
Eliminate		
No activities identified	28	53.8
Instructing special needs students	5	9.6
Other activities	5	9.6
Adult farmer classes	4	7.7
Coaching athletics	4	7.7
Junior high/pre-voc teaching	3	5.8
SOEP placement coordination	2	3.8
Young farmer chapter activities	1	1.9
Totals	52	100.0

Results of a MANOVA test revealed three significantly different inservice topic subscales based on selected personal and situational characteristics of beginning teachers. These are reported in Table 5. The need for inservice education in the areas of FFA involvement and agricultural mechanics was significantly higher for teachers employed in single teacher departments. Beginning teachers employed in area vocational technical schools (AVTS) reported significantly less need for inservice education in the area of FFA involvement than those employed in comprehensive high schools. Beginning teachers reporting responsibility for adult education perceived a greater need for inservice in FFA involvement. First year teachers reported significantly greater need for inservice in the area of adult activities.

Table 4

Composite Means for Inservice Topic Subscales

Subscale	N	$\bar{X}$	S.D.
Skill development	52	5.34	1.10
FFA involvement	52	5.21	1.30
Agricultural mechanics	52	5.18	1.56
Program development	52	5.15	1.19
SOEP supervision	52	5.13	1.43
Adult activities	52	4.80	1.52
Public relations	52	4.51	1.28
Teaching methods	52	4.41	1.28

Each of the 75 possible inservice topics were ranked by mean score from high to low. Table 6 reveals five items which produced means greater than 6.0 and seven items which produced means less that 4.0. All other topics produced response means between 4.0 and 6.0 (see Appendix A; Table 7). Those items which were rated highest (above 6.0) included using a microcomputer in the classroom, developing skills in agribusiness and electricity, training contest teams, and assisting students with SOEP records. Items which produced means below the 4.0 level included operating audio-visual equipment, participating in vocational education and other professional education activities, planning and conducting field trips, participating in civic organizations, completing reports for local administrators, and teaching day classes. Sixty-six of the 75 inservice items produced responses from both extremes of the nine-point scale indicating a general lack of agreement among respondents.

Table 5

Significantly Different Inservice Topic Subscale Means for Selected Characteristics of Beginning Teachers

Characteristic	N	$\bar{X}$	F	p
	FFA Involvement Subscale			
Number of teachers in department				
Single	38	5.43[1]	4.54	.038
Multiple	14	4.59		
AVTS teaching				
No	47	5.40	13.12	.001
Yes	5	3.40		
Adult Farmer Classes				
No	38	4.96	5.35	.025
Yes	14	5.87		
	Agricultural Mechanics Subscale			
Number of teachers in department				
Single	38	5.48	5.83	.019
Multiple	14	4.36		
	Adult Activities Subscale			
Years of teaching experience				
First Year	24	5.54	5.26	.003
Second Year	26	4.11		

[1] Responses were coded 1 = no need, 5 = average need, 9 = absolute need.

Table 6

Inservice Topics With Scale Value Means Above 6.0 and Below 4.0.

Inservice topic	$\bar{X}$	S.D.
Above 6.0		
Using a microcomputer in the classroom	6.65	2.27
Developing skills in agribusiness management	6.63	1.69
Developing skills in electricity	6.19	2.22
Training teams for vocational agriculture and FFA contests	6.09	1.68
Assisting students with SOEP records	6.01	2.28
Below 4.0		
Operating audio visual equipment	2.28	1.83
Participating in professional vo ed activities	3.40	2.09
Participating in professional education activities	3.40	2.23
Planning and conducting student field trips	3.40	1.89
Participating in local civic organizations	3.52	2.01
Completing reports for local administrators	3.79	2.19
Teaching local day classes	3.98	2.17

CONCLUSIONS

1. Subscale categories labeled skill development, FFA involvement, agricultural mechanics, program development and SOEP supervision were perceived to be of greater-than-average need by beginning teachers (composite subscale means greater that 5.0).

2. Five inservice topics were identified as relatively high priority (topic means above 6.0) and seven inservice topics were identified in the lowest priority category (topic means below 4.0).

3. There is a general lack of consensus among beginning vocational agriculture teachers concerning inservice needs as responses to topics identified varied widely.

4. Beginning teachers in single teacher departments perceived greater need for inservice in FFA advising and agricultural mechanics than did those from multiple teacher programs.

5. Respondents who reported responsibilities for adult instruction perceived a greater need for inservice in the area of FFA advisement.

6. First year teachers perceived greater need for inservice in the area of adult education activities.

7. The greatest need for inservice appeared to be in:
   a. Using a microcomputer in the classroom.
   b. Developing skills in agribusiness management.
   c. Developing skills in electricity.
   d. Training contest teams for vocational agriculture and FFA.
   e. Assisting students with SOEP records.

RECOMMENDATIONS

1. Inservice programs for beginning teachers should focus on skill development, FFA involvement, agricultural mechanics, program development, and SOEP supervision.

2. Inservice programs should be provided for skill development in the in the following areas for beginning teachers.
   a. Using a microcomputer in the classroom.
   b. Developing skills in agribusiness management.
   c. Developing skills in electricity
   d. Training contest teams for vocational agriculture and FFA.
   e. Assisting students with SOEP records.

3. Inservice programs should avoid the following topics:
   a. Operating audio visual equipment.
   b. Participating in professional vo ed activities.
   c. Participating in professional activities.
   d. Planning and conducting student field trips.
   e. Participating in local civic organizations.
   f. Completing reports for local administrators.
   g. Teaching local day classes.

4. Future programs of inservice for first year teachers should place particular emphasize on adult education activities.

5. Inservice programs for beginning vocational agriculture teachers may prove most beneficial when problems faced by individual participants are addressed.

6. Inservice programs for beginning teachers in a single teacher department should focus on the areas of FFA advising and agricultural mechanics.

7. Teacher Educators should strengthen their preservice programs to provide instruction in the following areas:
   a. Using a microcomputer in the classroom.
   b. Developing skills in agribusiness management.
   c. Developing skills in electricity.
   d. Training contest teams for vocational agriculture and FFA.
   e. Assisting students with SOEP records.

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APPENDIX A

Table 7

Means, Standard Deviations and Subscale Classifications for the 75 Inservice Topics.

	Topic	N	$\overline{X}$	S.D.	Subscale[1]
1.	Planning and conducting student field trips.	52	3.40	1.89	B
2.	Maintaining a neat and organized facility.	52	5.31	2.28	A
3.	Completing reports for state administrators.	52	4.79	2.05	A
4.	Training vo ag/FFA contest or judging teams.	52	6.10	1.68	C
5.	Using a microcomputer in classroom teching.	52	6.65	2.27	B
6.	Implementing VIMS (Vocational Instructional Management Systems) in the local program.	52	5.63	2.19	A
7.	Reparing shop tools.	52	5.04	2.03	G
8.	Locating SOE placement opportunities for students.	52	5.52	1.73	D
9.	Developing a teaching calendar.	52	4.06	1.83	A
10.	Participating in local civic organizations.	52	3.52	2.01	H
11.	Incorporating an agri-business component into the local program.	52	5.87	1.71	A
12.	Developing skills in horticulture.	52	4.65	2.28	F
13.	Conducting student SOE visits.	52	4.60	2.09	D
14.	Exhibiting student projects at shows and fairs.	52	4.85	2.08	D
15.	Identifying supplies, materials and equipment needed in the local program.	52	5.56	2.16	A
16.	Organizing the local shop for teaching ag. mechanics.	52	5.58	2.15	G
17.	Conducting an adult farmer class.	52	5.85	2.20	E
18.	Developing skills with small gas engines.	52	5.31	2.21	F
19.	Assisting with placement of program graduates.	52	5.13	2.12	A

Table 7 Con't.

20.	Teaching local day classes.	52	3.98	2.17	B
21.	Maintaining safety in the shop.	52	4.83	2.31	G
22.	Participating in the National FFA Convention.	52	4.56	2.15	C
23.	Conducting a parent/ teacher conference.	52	4.04	2.21	H
24.	Developing skills in crop production.	52	4.69	2.11	F
25.	Conducting young farmer visits.	52	4.04	2.19	E
26.	Developing an effective public relations program.	52	5.90	1.91	H
27.	Assisting students with SOEP records.	52	6.02	2.28	D
28.	Formulating a summer calendar of Vo Ag/FFA activities.	52	4.11	2.17	A
29.	Surveying the need for agricultural education in the local community.	52	5.44	1.92	A
30.	Maintaining a file of individual student records.	52	4.56	2.05	A
31.	Coordinating activities with local agricultural organizations or agencies.	52	5.13	1.70	H
32.	Conducting local FFA chapter activities.	52	5.48	2.05	C
33.	Developing skills in marketing agricultural products.	52	5.81	1.83	F
34.	Conducting adult farmer visits.	52	4.11	2.18	E
35.	Selecting student references.	52	5.81	2.24	A
36.	Organizing a local FBMA (farm business management analysis) program.	52	4.58	2.79	E
37.	Operating instructional medial equipment (projectors, recorders, etc.).	52	2.29	1.83	B
38.	Developing skills in soil management.	52	5.08	1.90	F
39.	Preparing tests and quizes.	52	4.08	2.19	B

Table 7 Con't

40.	Participating in professional vocational education association activities (NVATA, MVATA AVA, MVA).	52	3.40	2.23	H
41.	Supervising SOE ownership programs.	52	4.60	2.17	D
42.	Organizing a local FFA Alumni affiliate.	52	5.31	2.31	E
43.	Preparing news releases about local program activities.	52	5.48	1.87	H
44.	Constructing a vo. ag. classroom bulletin board.	52	4.37	2.01	B
45.	Managing classes in shop using a rotational skills system.	52	5.08	2.37	G
46.	Developing skills in livestock production.	52	4.60	2.10	F
47.	Completing reports for local administrators.	52	3.79	2.19	A
48.	Utilizing a local vo. ag. program advisory committee.	52	5.65	2.16	A
49.	Organizing a vo. ag. department library.	52	5.11	1.89	A
50.	Preparing lesson plans for teaching.	52	4.19	2.08	B
51.	Grading students.	52	4.54	2.16	B
52.	Developing skills in concrete construction.	52	4.73	2.12	F
53.	Participating in young farmer activities above the local level.	52	4.06	2.30	E
54.	Developing teaching aids for use in classroom instruction.	52	5.33	1.95	B
55.	Developing skills in metals and welding.	52	4.88	2.13	F
56.	Maintaining student discipline.	52	5.25	2.38	B
57.	Publishing a summer vo. ag. newsletter.	52	5.19	2.12	H
58.	Assisting students in developing written SOE program plans.	52	5.02	1.96	D
59.	Maintaining shop equipment.	52	5.25	2.10	G
60.	Implementing a VIMS record keeping system.	52	5.40	2.72	A
61.	Reorganizing the local vo. ag. curriculum.	52	5.35	2.34	A

Table 7 Con't

62.	Developing skills in agribusiness management.	52	6.63	1.69	F
63.	Evaluating the local vo. ag. program.	52	5.40	2.09	A
64.	Utilizing the local FFA Alumni affiliate.	52	5.12	2.37	E
65.	Conducting young farmer classes.	52	5.33	2.34	E
66.	Participating in FFA activities above the local chapter level.	52	5.37	1.92	C
67.	Developing skills in record keeping.	52	5.67	2.41	F
68.	Conducting recreational activities for local FFA members.	52	4.83	1.93	C
69.	Supervising SOE placement programs.	52	5.33	1.99	D
70.	Participating in professional education association activities (NEA, MSTA, etc.).	52	3.40	2.09	H
71.	Preparing a rotational replacement schedule for shop equipment.	52	5.31	2.07	G
72.	Conducting fund raising activities for the local FFA chapter.	52	4.93	1.91	C
73.	Organizing a vo. ag. department filing system.	52	5.81	2.28	A
74.	Developing skills in forestry.	52	5.81	2.45	F
75.	Developing skills in electricity.	52	6.19	2.22	F

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[1] Subscale codes are as follows: A = Program Development, B = Teaching Methods, C = FFA Involvement, D = SOEP Supervision, E = Adult Activities, F = Skill Development, G = Agricultural Mechanics, H = Public Relations.

VOCATIONAL AGRICULTURE ENTRY-YEAR TEACHERS' AND ENTRY-YEAR ASSISTANCE COMMITTEE MEMBERS' PERCEPTIONS OF THE OKLAHOMA ENTRY-YEAR ASSISTANCE PROGRAM (HB1706)

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INTRODUCTION

The Entry-Year Assistance Program (EYAP) is a relatively new approach for improving the quality of teachers in Oklahoma. It was introduced by the Oklahoma Teacher Reform Act of 1980 (House Bill 1706), which was proposed to improve the quality of teachers in accredited schools through implementing additional licensing and certification requirements. (Other states may refer to this type of program as Teacher Induction Program.)

A licensed teacher must participate in the EYAP during the initial year of teaching in an accredited school. This is performed under the guidance and assistance of the Entry-Year Assistance Committee (EYAC) in order to qualify for an Oklahoma Teaching Certificate.

Need for the Study

Since the Entry-Year Assistance Program was a new concept to Oklahoma education, data had not been elicited, analyzed, or reported which would reflect the perceptions of the EYAP by those who had participated as vocational agriculture EYAC members or Entry-Year Vocational Agriculture Teachers (EYT's).

The results of this study should provide decision makers and leaders in the field of Education with valuable information regarding Entry-Year Assistance Programs (or Teacher Induction Programs). Some states have implemented similar Teacher Induction Programs and many other states are fully considering implementing similar programs. This is a landmark study which analyzed specifically a subject matter area (vocational agriculture) within the Oklahoma Entry-Year Assistance Program and the study obtained the perceptions of everyone who had participated in this new program since its implementation.

OBJECTIVES OF THE STUDY

1. To identify the perceptions of the EYAC members (teacher consultants, administrators, and teacher educators) and the Entry-Year Vocational Agriculture Teachers concerning the EYAP.
2. To determine whether or not the EYAC provided needed assistance to the Entry-Year Vocational Agriculture Teacher as perceived by the EYAP committee members.
3. To determine whether or not they received needed assistance from the EYAC, based on the perceptions of the Entry-Year Vocational Agriculture Teachers.

4. To determine the level of importance of the EYAP regarding the teachers' first year of teaching as perceived by the EYAC and the Entry-Year Vocational Agriculture Teachers.

5. To determine whether or not the evaluation/observation instrument provided a fair assessment of the Entry-Year Vocational Agriculture Teachers' teaching performance.

6. To determine the major strengths and major problems of the EYAP as perceived by the EYAC members and the Entry-Year Vocational Agriculture Teachers.

7. To determine whether or not meaningful parental input was a valuable consideration for determining certification of the Entry-Year Vocational Agriculture Teachers.

8. To determine the involvement of the EYAC's in working with the Entry-Year Vocational Agriculture Teachers in areas of staff development and time, as mandated by requirements of House Bill 1706.

9. To determine whether or not those involved in the EYAP had received any orientation as it related to the EYAP prior to becoming a part of the EYAP.

10. To determine whether or not the EYAC's and the Entry-Year Vocational Agriculture Teachers favored the continuance of the EYAP.

METHODS AND PROCEDURES

Population

To accomplish the purpose of this study, Entry-Year Vocational Agriculture Teachers and EYAC members for the academic years of 1982-83 and 1983-84 were surveyed. For the two year period there were a total of 67 Entry-Year Vocational Agriculture Teachers employed within the boundaries of the State of Oklahoma. To provide assistance and guidance to the Entry-Year Vocational Agriculture Teachers there were 67 teacher consultants who were assigned by their principals, 64 administrators who were selected by their local boards of education, and 14 teacher educators from Oklahoma State University (OSU), Cameron State University, and Panhandle State University. A total population of 212 participants were involved in the EYAP as it related to the vocational agriculture teachers' first year of teaching. Of the total population of 212 participants, 205 (96.69%) responded to the telephone interview (Table I). Several attempts were made to contact the remaining seven (3.31%) prospective respondents. However, the investigator was not able to locate their whereabouts because their new addresses and telephone numbers were unknown.

The list of the Entry-Year Vocational Agriculture Teachers and the EYAC members were obtained from several sources. The list of the Entry-Year Vocational Agriculture Teachers and EYAC members for the academic years of 1982-83 and 1983-84 were obtained from the College of Education and the office of the EYAP Coordinator for Vocational Agriculture, OSU. A list of the 1982-83 and 1983-84 Entry-Year Vocational Agriculture Teachers who graduate from Cameron State University and Panhandle State University and their EYAC members were obtained from their respective universities.

TABLE I

FREQUENCY DISTRIBUTION OF RESPONDENTS BY PROFESSION

Profession	Population Size	Respondents N	%
Teacher Consultants	67	65	30.66
Administrators	64	62	29.24
Teacher Educators	14	14	6.60
Entry-Year Vo-Ag Teachers	67	64	30.19
Totals	212*	205	96.69

*Of the 212 individuals eligible to be included in this study, two teacher consultants, two administrators, and three Entry-Year Vo-Ag Teachers could not be located to be interviewed.

Development of Instrument

The instrument developed contained general questions seeking qualitative and quantitative information to determine the Entry-Year Vocational Agriculture Teachers' and the EYAC members' perceptions of the EYAP.

The major concern was how to administer the instrument in order to obtain a high percentage of responses. Two methods of obtaining responses were studied: mailed questionnaires and telephone interviews. In order to determine which method to use in collecting data, input from a research report which was conducted by Finley and Key (1983) was considered. The report yielded the following information:

1. It is more economical to use the telephone to gather data.
2. The percent of valid responses will be approximately twice as great through the telephone interview as anticipated by mailed questionnaires.
3. An infinitely large population or a small population are both well suited to the telephone interview technique.
4. Interviews conducted over the telephone are highly reliable (p.4).

Because of these finding and the relatively small population to be surveyed, the data for this study were collected by telephone interview.

The next step was to compile a list of general questions that were relevant to determining the perception of the EYAP in vocational agriculture. These questions were derived from interviews with vocational agriculture teachers who served under the EYAP, and administrators, teacher consultants, and teacher educators who served on the EYAC for vocational agriculture teachers.

After development of the initial instrument, the faculty of the Agricultural Education Department of OSU reviewed it for content, applicability, and clarity. After receiving this input, revisions were made to strengthen the instrument. The next step was to determine the reliability of the instrument and make further revisions, if necessary.

Prior to the actual telephone interview, post cards were mailed to the 212 Entry-Year Vocational Agriculture Teachers and EYAC members describing the purpose of the study, approximately when they would be contacted, and eliciting their assistance. Another purpose for contacting the participants in this way was to allow them time to consider relevant aspects of the forthcoming interview, which provided more accurate information for the study.

Collection of Data

An introductory statement was designed to be used with the interview to ensure a collective understanding of the study by all respondents and to establish a specified structure for the interview.

Information obtained from the interviews provided the Entry-Year Vocational Agriculture Teachers' and the EYAC members' perceptions of the EYAC. The questions contained in the interview required answers on an interval scale with some short answers also being required.

Analysis of Data

The statistical treatment for all responses consisted of frequency distribution and percentages. The responses to questions on the instrument were of two types: (1) Qualitative, which requested responses such as: Definitely Yes, Probably Yes, Uncertain, Probably Not, or Definitely Not, and questions which elicited a "Yes" or "No" response and (2) Quantitative, which offered the respondents the opportunity to provide more than one response to a question.

All information collected was keypunched on International Business Machine (IBM) cards and a Statistical Analysis System (SAS) program was utilized initiating computations by the IBM System 3081, Model D computer.

FINDINGS

Respondents' Perceptions of Assistance Provided by the Entry-Year Assistance Program

A summary of the responses to questions pertaining to assistance (or lack of) provided by the EYAC members is presented in Table II.

TABLE II

SUMMARY OF RESPONDENTS' PERCEPTIONS RELATIVE TO ASSISTANCE EITHER PROVIDED BY OR NOT PROVIDED BY ENTRY-YEAR ASSISTANCE PROGRAM

Perception of Assistance	Frequency Distribution of Responses N(%)					TOTALS N(%)
EYAC members' perceptions on whether or not they provided needed assistance to EYT	Definitely Yes 71(50.35%)	Probably Yes 65(46.10%)	Uncertain 2(1.42%)	Probably Not 3(2.13%)	Definitely Not --	141(100.00%)
EYTs' perceptions as to whether or not they received needed assistance from EYAC	Definitely Yes 34(53.13%)	Probably Yes 23(35.94%)	Uncertain 2(3.12%)	Probably Not 2(3.12%)	Definitely Not 3(4.69%)	64(100.00%)
Individuals who provided most assistance based on perceptions of EYT	Teacher Consultant 22(34.38%)	Administrator 7(10.94%)	Teacher Educator 21(32.81%)	Another Experienced Teacher 4(6.25%)	Other 10(15.62%)	64(100.00%)
Times EYAC members were asked for assistance as perceived by EYAC members and the EYT	Never 19(9.27%)	1-5 59(28.78%)	6-10 30(14.63%)	11-15 23(11.22%)	More Than 15 74(36.10%)	205(100.00%)

Respondents' Perceptions of the Importance of the Entry-Year Assistance Program

A summary of responses to questions pertaining to the importance of the EYAP is presented in Table III. A large majority of the respondents (88.78%) felt that the EYAP was important. The remaining respondents (11.22%) felt that the EYAP was less than important. When asked why the EYAP was important, the following reasons were given:

1. Provides an opportunity for consultation and discussion
2. Creates a feeling of security on the part of the Entry-Year Vocational Agriculture Teachers
3. Provides improved classroom management

The respondents who felt that the EYAP was not important were asked why they felt that way. The following reasons were given:

1. There was a lack of importance as viewed by the Entry-Year Vocational Agriculture Teachers and the EYAC members.
2. The EYAP involves too much time
3. The EYAP creates a feeling of apprehension on the part of the Entry-Year Vocational Agriculture Teachers

Respondents' Perceptions of the Evaluation/ Observation Instrument

Table IV summarizes the respondents' perceptions of the evaluation/ observation instrument. Two hundred and five respondents were asked if the evaluation/observation instrument provided a fair assessment of the Entry-Year Vocational Agriculture Teachers' abilities. An overwhelming majority (93.66%) of the respondents indicated that the evaluation/ observation instrument did provide a fair assessment of the Entry-Year Vocational Agriculture Teachers' abilities.

Respondents' Perceptions of the Major Strengths and Problems of the Entry-Year Assistance Program

A summary of responses to questions pertaining to major strengths and problems is also presented in Table IV. Of the 205 respondents, 114 (55.61%) respondents indicated the major strengths to be:

1. Assistance from the EYAC (as a whole)
2. Guidance in making decisions
3. Moral support that is offered by the EYAC

Based on the question pertaining to the major problems with the EYAP, 65 (31.71%) respondents indicated that they did not perceive any major problems with the EYAP. Eighty-four (40.97%) respondents indicated the following as major problems:

1. Amount of time required
2. Lack of understanding the total vocational agriculture program by the teacher consultants and administrators.
3. Insufficient overall assistance

Respondents' Perceptions of Selected Components of the Entry-Year Assistance Program

A summary of responses to questions pertaining to selected components of the EYAP is presented in Table V. When asked whether or

TABLE III

SUMMARY OF RESPONDENTS' PERCEPTIONS OF IMPORTANCE OR LACK OF IMPORTANCE OF ENTRY-YEAR ASSISTANCE PROGRAM

Perception of Importance	Frequency Distribution of Responses N(%)				TOTALS N(%)
Importance of EYAC	Very Important 116(56.59%)	Important 66(32.19%)	Less Than Important 17(8.29%)	Unimportant 6(2.93%)	205(100.00%)
Reasons EYAP is important	Provided Opportunity for Consultation and Discussion of Problem 71(34.63%)*	Created Feeling of Security on Part of EYT 70(34.15%)*	Improved Classroom Management 45(21.95%)*		
Reasons EYAP is not important	Lack of Importance as Viewed by EYT and EYAC Members 11(5.37%)**	Too Much Time Involvement 5(2.44%)**	Created Feeling of Apprehension on Part of EYT 5(2.44%)**		

*Respondents could indicate more than one response as to why the EYAP is important, therefore there is no total N or %.

**Only respondents who felt EYAP was not important responded to this question, therefore there is no total N or %.

TABLE IV

SUMMARY OF RESPONDENTS' PERCEPTIONS OF OBSERVATION INSTRUMENT AND MAJOR STRENGTHS AND PROBLEMS CONCERNING ENTRY-YEAR ASSISTANCE PROGRAM

Respondents' Perceptions	Frequency Distribution of Responses N(%)					TOTALS N(%)
Did evaluation/observation instrument provide a fair assessment of EYTs' abilities?	Definitely Yes 82(40.00%)	Probably Yes 110(53.66%)	Uncertain 3(1.46%)	Probably Not 7(3.42%)	Definitely Not 3(1.46%)	205(100.00%)
Reasons why evaluation/observation instrument provided a fair assessment of EYT	Covered All Categories of Vocational Agriculture 107(52.19%)*	Provided an Opportunity to Make Comments 34(16.58%)*	Did Not Remember the Instrument 26(12.68%)*			
Major strength of EYAP	Assistance From EYAC as a Whole 47(22.93%)	Assistance From TC 36(17.56%)	Guidance in Making Decisions 35(17.07%)	Moral Support 32(15.61%)	Other 55(26.83%)	205(100.00%)
Major problems of EYAP	No Major Problems 65(31.71%)	Amount of Time Required 38(18.54%)	Overall Assistance Insufficient 16(7.80%)	Lack of T.C. and Administrative Understanding of Vo Ag Program 16(7.80%)	Other 70(34.15%)	205(100.00%)

*Not all respondents gave reasons why the evaluation/observation instrument provided a fair assessment of the EYTs' abilities, therefore there is no total N or %.

TABLE V

SUMMARY OF RESPONDENTS' PERCEPTIONS OF SELECTED COMPONENTS OF ENTRY-YEAR ASSISTANCE PROGRAM

Components	Frequency Distribution of Responses N(%)					TOTALS N(%)
Continuance of EYAP	Strongly Favor 117(57.08%)	Tend to Favor 64(31.22%)	Uncertain 4(1.95%)	Tend to Oppose 12(5.85%)	Strongly Oppose 8(3.90%)	205(100.00%)
Opportunity to adjust and improve	Definitely Yes 159(77.56%)	Probably Yes 41(20.00%)	Uncertain 2(0.98%)	Probably Not 3(1.46%)	Definitely Not --	205(100.00%)
Assisted in classroom management	Definitely Yes 111(54.15%)	Probably Yes 73(35.61%)	Uncertain 4(1.95%)	Probably Not 13(6.34%)	Definitely Not 4(1.95%)	205(100.00%)
Parental input consideration	Definitely Yes 82(40.00%)	Probably Yes 65(31.71%)	Probably Not 39(19.02%)	Definitely Not 19(9.27%)		205(100.00%)
Areas of improvement identified	Yes 54(26.34%)	No 151(74.66%)				205(100.00%)
Received orientation	Yes 119(58.05%)	No 86(41.95%)				205(100.00%)
Teacher consultant provided at least 72 hours of assistance and consultation	Yes 38(59.38%)	No 26(40.62%)				64(100.00%)

not the respondents favored the continuance of the EYAP, 181 (88.30%) respondents indicated that they "Favor" or "Strongly favor" the continuance of the EYAP.

CONCLUSIONS

The analysis of data and subsequent findings were the basis for the following conclusions:

1. It was concluded that the EYAC's were composed of experienced educators, since all members had extensive years of teaching and/or administrative experience and/or teacher education experience.
2. Since an overwhelming majority of the EYAC members believed they provided needed assistance to the Entry-Year Vocational Agriculture Teacher and an overwhelming majority of the Entry-Year Vocational Agriculture Teachers believed they received needed assistance, it was concluded that adequate assistance was provided to the Entry-Year Vocational Agriculture Teachers.
3. Since approximately equal numbers of EYT's indicated that teacher consultants and teacher educators provided the most assistance and only 11% indicated that the administrators provided the most assistance, it was concluded that teacher educators and teacher consultants provided the most assistance to the Entry-Year Vocational Agriculture Teacher.
4. Based on the perceptions of the EYAC members and the Entry-Year Vocational Agriculture Teachers, it was concluded that the EYAP was important regarding the teachers' first years of teaching.
5. After reviewing the findings, it was concluded that a vast majority of the respondents interviewed believed the evaluation/observation instrument used to evaluate the Entry-Year Vocational Agriculture Teachers' performance provided a fair assessment of his/her abilities. Although it was apparent in the findings that a majority of the respondents felt the instrument covered all categories of vocational agriculture, it was concluded that only a few (28.57%) of the teacher educators agreed that the instrument covered all categories of vocational agriculture. The respondents who indicated that the evaluation/observation instrument did not provide a fair assessment indicated a need for refinement.
6. Due to the responses elicited from the respondents, it was concluded that the major strengths of the EYAP were:
    a. Assistance from the EYAC (as a whole)
    b. Moral support
    c. Guidance in making decisions
7. Based on a review of the findings, it was concluded that the "Amount of time required" was the major problem with the EYAP. However, more specifically, the teacher educators believed the "Overall assistance of the EYAC was insufficient".
8. Since over 97% of all respondents indicated that the committee members provided reasonable opportunity for the Entry-Year Vocational Agriculture Teachers to adjust and improve as the year progressed, it was concluded that the Entry-Year Vocational Agriculture Teachers were definitely provided reasonable opportunity to adjust and improve as the year progressed.
9. Since approximately 90% of all respondents indicated that the EYAP assisted in all matters concerning classroom management, it was

concluded that the EYAP strongly assisted the Entry-Year Vocational Agriculture Teachers in all matters of classroom management.

10. Since over 70% of the respondents indicated that parental input was a valuable consideration for determining certification, it was concluded that parental input was valuable in determining certification of the Entry-Year Vocational Agriculture Teachers.

11. Since over 70% of the respondents indicated that areas of needed improvement were not identified and that inservice or staff development programs were not recommended at the third EYAC meeting, it was concluded that inservice or staff development programs were not emphasized to the extent needed.

12. Since only a small majority of the respondents indicated that they had received orientation as it related to the EYAP prior to becoming a part of the EYAP, it was concluded that there was a lack of orientation received as perceived by the EYAC members and the Entry-Year Vocational Agriculture Teachers.

13. Since 40% of the Entry-Year Vocational Agriculture Teachers indicated that the teacher consultants did not spend the required 72 hours of his/her time in providing assistance, it was concluded that many teacher consultants did not provide the assistance required by HB 1706.

14. It was concluded that the structure and organization of the EYAP was adequately planned, since 40% of the respondents indicated that no changes were needed.

15. It was concluded that the EYAP should be continued, based on the opinion of 88% of the respondents.

16. There was sufficient evidence to conclude that the respondents (including the teacher consultants, administrators, teacher educators, and Entry-Year Vocational Agriculture Teachers) basically possess like perceptions of the EYAP.

RECOMMENDATIONS

As a result of the conclusions drawn from the analysis and interpretation of data, the following recommendations are made:

1. Based on the conclusion that all EYAC members had extensive teaching, administrative, and/or teacher education experience, it is recommended that a high level of experience on the EYAC's be continued.

2. Based on the conclusion that adequate assistance was provided to the Entry-Year Vocational Agriculture Teachers, it is recommended that a high level of assistance be continued.

3. Based on the conclusion that teacher consultants and teacher educators provided the most assistance to the Entry-Year Vocational Agriculture Teachers, it was recommended that teacher consultants and teacher educators continue their responsibilities of providing needed assistance. Additionally, the administrators should not only continue those responsibilities, but should strive to devote more time to those particular endeavors.

4. Based on the conclusion of importance by all respondents, it is recommended that the EYAP definitely be continued.

5. Based on the conclusion that the evaluation/observation instrument provided a fair assessment of the Entry-Year Vocational Agriculture Teachers' performance, it is recommended that the use of the instrument be continued. However, based on teacher educators' concerns over completeness and individual comments on refinement, it is recommended that steps be taken to refine the instrument.

6. Based on the conclusions that the "Amount of time required" is a major problem with the EYAP, it is recommended that release time or other professional assistance be provided to the members of the EYAC's.

7. It was apparent that the Entry-Year Vocational Agriculture Teachers were provided reasonable opportunity to adjust and improve as the year progressed; therefore, it is recommended that the EYAC members continue providing this opportunity to the Entry-Year Vocational Agriculture Teachers.

8. It was concluded that the EYAP assisted in all matters concerning classroom management; therefore, it is recommended that assistance continue to be provided in the area of classroom management.

9. Based on the conclusion that meaningful parental input was a valuable consideration for determining certification, it is recommended that parental input continue to be strongly considered for determining certification and that the importance of parental input be stressed to all EYAC members.

10. Since inservice or staff development programs (which addressed the areas needed for Entry-Year Vocational Agriculture Teachers' improvement) were not recommended at the final committee meeting by the EYAC, every effort should be made to ensure that inservice or staff development programs are recommended at the final EYAC meeting.

11. Based on the findings that approximately one-half of the Entry-Year Vocational Agriculture Teachers and administrators and more than one-half of the teacher consultants were not oriented prior to becoming a part of the EYAP, it is recommended that an orientation program be implemented in the local schools to familiarize public school administrative and teaching personnel with specifications of the EYAP. It is further recommended that vocational agricultural teacher training institutions implement an orientation program for entry-year teachers, since 41% had received no orientation.

12. It was indicated that many of the teacher consultants did not spend the required 72 hours of his/her time in providing assistance to the Entry-Year Vocational Agriculture Teachers; therefore, every effort should be made by the teacher consultants to spend the minimum 72 hours required providing guidance and assistance to Entry-Year Vocational Agriculture Teachers. It is further recommended that teacher consultants be allowed release time to perform duties, as mandated by House Bill 1706.

13. It is strongly recommended that the EYAP be continued, based on the indications that the EYAP provided:

a. An opportunity for consultation and discussion of problems
b. A feeling of security on the part of the Entry-Year Vocational Agriculture Teachers
c. Assistance needed to improve classroom management
d. Moral support
e. Guidance in making decision (in addition to the respondents favoring continuance of the EYAP)

14. It was apparent that some of the teacher educators who served on the EYAC's for the Entry-Year Vocational Agriculture Teachers has no experience in vocational agriculture or in teacher education in higher education. Therefore, it is recommended that further research be conducted to determine if there was a difference in those EYAC's having agricultural education teacher educators and other faculty members.

RECOMMENDATIONS FOR ADDITIONAL RESEARCH

The following recommendations are made in regard to additional research. These recommendations are based on the examination of the findings of this study.

1. There should be similar studies conducted concerning other teaching discipline areas and the results compared with the findings of this study.
2. A follow-up study should be conducted with Entry-Year Vocational Agriculture Teachers and EYAC members, and the results compared with the findings of this study.
3. Specific research should be conducted to determine what assistance is needed by the Entry-Year Vocational Agriculture Teachers.
4. Specific research should be conducted to determine the kinds of assistance the EYAC members provided.
5. It is recommended that additional in-depth research be conducted to assess the usefulness of the evaluation/observation instrument as a source for determining strengths and weaknesses of the Entry-Year Vocational Agriculture Teachers.
6. Additional research should be conducted with emphasis on determining specific major problems within the EYAP.
7. Specific research should be conducted in order to determine obstacles which hinder assistance to Entry-Year Teachers by the EYAC.
8. Specific research should be conducted to determine how parental input was obtained and to determine the extent of the usefulness of parental input.
9. Specific research should be conducted to determine areas of needed improvement for Entry-Year Teachers and types of prescriptive programs for continued improvement and development.
10. Specific research should be conducted on the nature and extent of orientation programs designed to familiarize teacher consultants and administrators with the EYAP.
11. Specific research should be conducted to obtain perceptions of administrators relative to their role in the EYAP.
12. Specific research should be conducted to obtain perceptions of teacher consultants relative to their role in the EYAP.
13. Specific research should be conducted to obtain perceptions of teacher educators relative to their role in the EYAP.
14. Teacher training institutions should be surveyed to determine the nature and extent of undergraduate orientation to the EYAP.

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MEETING TEACHER NEEDS
A DISCUSSION OF RESEARCH

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INTRODUCTION

The three research reports presented in this session relate directly to concerns that are important to teacher education. The authors are to be commended for their efforts in investigating very timely and practical topics related to meeting teacher needs. These papers provide insights that will be very useful.

My remarks regarding the three papers that have been presented in this session are based upon the questions that occurred to me as I read their papers. I was not fully aware of the limitations surrounding each study. Therefore, I may raise some questions that have very logical answers.

EARLY FIELD BASED EXPERIENCE PROGRAMS AND ATTITUDES OF PRE-SERVICE TEACHERS

This research was designed to examine the experience completed during the early field-based experience program and the attitudes of participants toward themselves as teachers and toward teaching. Major questions sought to determine (a) the extent and type of professional activities completed, (b) the relationship between the extent of professional activities completed and the attitude of participants toward themselves as teachers and toward teaching vocational agriculture, (c) the relationship between the extent of professional activities completed and selected demographic variables and (d) the relationship between the extent of professional activities completed and the conditions of the experience.

This is practical research that could be classified as a self-examination on the part of the researchers. The authors have looked at a widely adopted practice to determine how well it is working. My specific comments regarding this paper follow.

1. The paper is well written and the introduction does a good job of developing the need for research in this area.

2. The questions addressed by the research were appropriate. However, no where did the authors attempt to explain or build a rationale for the demographic variables used in question three.

3. Methodology was clearly stated and easy to follow.

4. The authors dealt with a very limited population. However, they did not make any attempts to generalize the study. Would it strengthen the study to gather data over several quarters rather than one?

5. Did the students perceive the interviews about the extent of professional experience to be connected to their grade in Agricultural Education 280.01? If so, did they accurately report their experience?

6. I would like to have seen more attention focus on the scale to measure the extent of professional activities. As the authors pointed out, higher scores did not necessarily indicate better early field experiences. In fact, several of the items on the questionaire such as working with students in the shop, conducting supervised occupational experience visits, and program planning and/or development should not be carried out by a pre-service teacher at that point in his/her training. It may be that the mid-range scores on the scale are the optimal scores.

7. In this study, attitudes appear to have little relationship to the early field experience. Is early field experience worth the effort? Are there other benefits derived from early field experience?

ANALYSIS OF THE INSERVICE NEEDS OF BEGINNING VOCATIONAL AGRICULTURE TEACHERS

This descriptive study was designed to prioritize the inservice needs of beginning vocational agriculture teachers in Missouri. The authors also sought to identify relationships that may have existed between perceived inservice needs and demographic characteristics and to assess the level of job satisfaction of beginning teachers.

The study addresses important areas of concern to teacher educators and supervisors. Though the authors make no attempt to generalize beyond Missouri, it is a study that probably has application to all states.

As in the previous study, several comments occurred to me as I read this paper.

1. The authors did a good job of citing previous research in this area. I wish they

would have discussed similarities of their findings to previous research on inservice needs.

2. What were the personal and employment situational characteristics used in the second objective? What rationale was used for their selection?

3. A beginning vocational agriculture teacher was defined as an individual who was employed in his/her first or second year of teaching. It would have been interesting to descriptively compare the responses of first and second year teachers on all of the variables.

4. Was the instrument field tested?

5. The objectives of the study were well stated. However, objective 3 did not seem to fit. Was job satisfaction really addressed in the study? I am not convinced that whether or not the teacher wants to eliminate anything from their current responsibilities represents job satisfaction.

6. Survey instruments were completed by teachers attending a beginning teacher class on campus and through the mail. Two questions occur to me related to data collection.

    a) At what point in the class were the questionnaires completed?

    b) Did those attending the class differ from those teachers surveyed through the mail?

7. The entire population was surveyed in this study. Would it have been a more appropriate analysis to look at correlation coefficients between variables?

8. How did you arrive at 6.0 as the cut-off for high priority inservice topics?

9. It was interesting to note that one of the lowest composite mean inservice subscales was public relations. Yet, when asked specifically about inservice topics, "developing an effective public relations program" ranked very high (seventh) and missed being on the high priority list by .10.

How were the 75 inservice items collapsed into subscales?

VOCATIONAL AGRICULTURE ENTRY-YEAR TEACHERS' AND ENTRY-YEAR ASSISTANCE COMMITTEE MEMBERS' PERCEPTIONS OF THE OKLAHOMA ENTRY YEAR ASSISTANCE PROGRAM

This was an interesting study designed to assess attitudes about the Entry-Year Assistance Program in Oklahoma. Several states are adopting similar first-year teacher programs and there is a general void of information on this subject. Obviously, it is an important area of concern and I applaud the researchers for their benchmark efforts in this area.

I would raise the following questions/comments relative to this paper.

1. The information reported is benchmark data that should be examined by all states with similar programs.

2. The researchers are to be commended for using the telephone to collect data.

3. The paper did not include an explanation of exactly what the Entry-Year Teacher Program is. This would strengthen the paper.

4. Why not briefly review some of the literature related to this topic? Forty-four references are listed in the bibliography.

5. How was reliability of the instrument established?

6. Were the 1982-83 teachers the first participants in the program? If so, were their opinions of the program different from the 1983-84 teachers?

7. At times some of the data are reported for the entire group of respondents and other times teachers and committee members are separated. Why the different treatment?

8. Could the conclusions be stated more succinctly with less repetition?

9. Finally, it is recommended in this study that research be conducted to determine what assistance first-year teachers need. The Birkenholz and Harbstreit paper

presented in this session could be of assistance with this problem.

CONCLUSION

In conclusion, my job as a discussant has been a pleasant one. All three papers sought answers to very important questions. I hope my comments have not been perceived as all negative. Much more good than bad can be found in these papers. I encourage you to continue your efforts in these areas.

WHERE ARE YOU WHEN WE NEED YOU, RUFUS W. STIMSON?

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Presented to the National Agricultural Education Research Meeting
Atlanta, Georgia
December 6, 1985

WHERE ARE YOU WHEN WE NEED YOU, RUFUS W. STIMSON?[1]

Between November 1982 and March 1984, twenty nine reports urging educational reform were published beginning with The Paideia Proposal: An Educational Manifesto (Adler) and ending with Horace's Compromise: The Dilemma of the American High School (Sizer). Each of these 29 reports described the ills affecting U.S. schools and made recommendations for change. One of the most publicized reports was A Nation at Risk (1983). This report convinced the public of the need for drastic educational reform. Like many of the other reports, A Nation at Risk stressed a return to "the basics," more emphasis on academics and traditional studies, and placed less emphasis on the vocational subjects. Collectively, these reports and resulting actions appear to be having a detrimental impact on the enrollment in vocational education (Price, 1985).

The clamor for educational reform is not exclusive to this decade. There was another period of time in the history of our nation when schools were intensely studied and criticized. This historical time of educational reform was around 1900. The complaints then, were that schools were out of touch with the common person, there was too much emphasis on the classics and academic studies, and a more relevant and practical approach to education was needed. Interestingly, the debate about education in the 1900s was the exact opposite of what was being said about education in the 1980s.

A leading advocate for a new type of education in the early 1900s was an agricultural educator. His name was Rufus W. Stimson. He is the father of several practices used in agricultural education today and implemented a new approach to education which made a major impact on the **WORLD**.

The objective of this paper is to reacquaint the members of the agricultural education profession with the life and teachings of Rufus Stimson. A careful examination of his life, philosophy and teachings will provide the members with an insight into the evolution of agricultural education. This information may be useful in combating the current forces which are trying to diminish the importance of vocational agriculture.

RUFUS W. STIMSON - THE PIONEER IN AGRICULTURAL EDUCATION

In volume 1, issue 3 (March 1929) of Agricultural Education, the editor, H. M. Hamlin, wrote (p. 2), "With this issue we are introducing a series of articles dealing with our current leaders. It is appropriate that we begin this series with the stories of some of the older men in the profession and it is likely that none will question the choice of Rufus W. Stimson of Massachusetts as the subject of the first article. . . . Unwaveringly, for 20 years, he has stood for the best in agricultural education. A man of cultural training, a gentleman and a scholar . . ."

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[1] Appreciation is extended to Dr. Ismail bin Yahya and Dr. Barbara A. Moore for their careful reading of this manuscript and scholarly suggestions.

Charles Prosser (1929, p. 15) observed, "To the movement for efficient training in agriculture of secondary grade, Rufus W. Stimson has probably contributed more than any single man."

L. H. Dennis, former executive secretary of the American Vocational Association stated (1929, p. 14), "Dr. R. W. Stimson is one of the pioneers in agricultural education in the United States. Many of us have looked to him for leadership and inspiration in the development of agricultural education programs in the various states."

Stimson is called the Dean of agricultural education workers by Sutherland and Lawson (1948). Webb (1985) called Stimson the father of agricultural education. In a presentation to a class at Virginia Tech, Harry Sanders, one of the founders of the FFA, stated that Stimson was a man of extraordinary vision, and had in the 1930s accurately predicted the diversification of agricultural education as it exists today (Camp, 1985).

In the three volume Biographical Dictionary of American Educators (Ohles, 1978) Stimson is one of three agricultural educators listed.

Hammonds (1932, p. 18) wrote, "The editor [referring to himself] wishes that all you might know personally Doctor Stimson . . . If you know your agricultural education you will recall his contributions to vocational work as we know it today."[2]

Who was Rufus Stimson? What were his contributions to the profession of agricultural education?

AN OVERVIEW OF THE LIFE OF RUFUS STIMSON

Rufus Whittaker Stimson was born February 20, 1868 on a farm near Palmer, Massachusetts to Horace W. and Harriet A. (Hunt) Stimson (Kornegay, 1978). He was educated in the public schools of Palmer. Stimson attended Colby College in Maine for two years and then went to Harvard University where he studied philosophy under William James. The works of Socrates, Rousseau, Pestalozzi, Froebel, and Herbart occupied a prominent place on his desk (Stimson 1942). While at Harvard he took a course in the theory and art of teaching given by Paul H. Hanus[3]. Stimson received the A.B. degree in philosophy in 1895 and the A.M. degree in 1896. He next attended the Yale Divinity School and received the B.D. in 1897.

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[2] Stimson is referred to as Dr. Stimson by many writers who speak of him. There is no record of a dissertation by Stimson in Dissertation Abstracts International. He was awarded an honorary doctorate by Colby College.

[3] Paul Hanus was the only professor of education at Harvard, later established the graduate school of education, was chairman of the Massachusetts Commission on Industrial Education, a member of the State board of education, and author of a wide array of books including Beginnings in Industrial Education.

From 1897 to 1901 Stimson was a professor of English, ethics, and public speaking at the Connecticut Agricultural College (now the University of Connecticut). On October 4, 1899 he married Helen Morris. Stimson ascended to the position of acting president in 1901 and was made president shortly thereafter. He served as president of the Connecticut Agricultural College until 1908.

In 1908, Stimson became director of Smith's Agricultural School, a secondary school in Northampton, Massachusetts. In 1911, he was invited to become state supervisor of agricultural education for Massachusetts. He served in this position until he retired at the age of 70 in 1938.

After Stimson retired, he continued teaching a Rural Problems Seminar at Simmons College in Boston which he had started in 1928 (Stimson, 1938). At the age of 71, Stimson received an appointment as a Research Specialist in Agricultural Education in the U.S. Office of Education for the purpose of writing a history of agricultural education (Stimson, 1940). The writing of the history was a massive project involving hundreds of people and over 5,000 pages of manuscript (Lathrop, 1947). Stimson called it a once-in-a-generation job. This book was published in 1942.

Stimson died on May 1, 1947 in Hyanis, Massachusetts. He was eighty years of age. At the time of his death he had nearly completed a book on the leaders of agricultural education. The book was to contain biographical sketches of the leaders along with samples and excerpts from their writings (Lathrop, 1947). Frank Lathrop promised to finish the book with aid of H. M. Hamlin[4].

THE CONTRIBUTIONS OF RUFUS W. STIMSON TO VOCATIONAL AGRICULTURE

When scholars of the profession discuss the contributions of Rufus W. Stimson to the development of vocational agriculture "the project method" of teaching (often referred to as "the project" or "project concept") is what first comes to mind. The project method, as envisioned and implemented by Stimson in 1908, has made a profound impact on the vocational education profession. He was also responsible for other developments which affected the profession. Since the "project method" is considered to be his major contribution, a detailed discussion of the project method is included in this paper but his other contributions are also described.

The Project Method - An Innovative Approach to Teaching

To understand how the project method came into existence, one should start by carefully examining Stimson's tenure at the Connecticut Agricultural College.

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[4] The author of this paper has contacted over 20 retired leaders in the profession, computer searched the U.S. government publications, and interviewed the people who worked closely with Hamlin between 1947 and 1950 in search of the manuscript/book. It has not yet been located.

The Birth of the Project Idea

Stimson's professional career started at the Connecticut Agricultural College in 1897. He was a professor of English, ethics, and public speaking. In 1901, he was appointed acting president and was made president shortly thereafter. When he assumed the presidency he was described as ". . . young, full of energy, and ambitious for the growth of the institution. He was by nature a publist" (Stemmons, 1931, p. 111).

Stimson believed in publicizing the institution and in working closely with community and state leaders. Prior to assuming the presidency, a major rift had disrupted the institution, destroyed the faith of the people of Connecticut in the institution, and had caused the ouster of the previous president. Stemmons (1931, p. 112) reports,

> Almost overnight the attitude of the public toward the school underwent a change. An eloquent speaker, President Stimson was ready at all times to carry the college to the people. He encouraged newspaper publicity and even indulged in a small amount of display advertising. It was a period of persuasive catalogs, circular letters, public addresses and contacts of every kind that might be calculated to give the institution popularity and standing with people in the state.

The curriculum at Connecticut Agricultural College was broadened during Stimson's tenure. "There was no desire to minimize agriculture but more of the arts and sciences were needed to supplement the practical courses" (Stemmons, 1931, p. 116).

Stimson built up the summer school for teachers (primarily through a course entitled "Agriculture and Nature Study"). He moved the agricultural experiment station to Storrs from Wesleyan. He brought electricity and the trolley to the campus, and increased the regular enrollment by nearly 700 percent. Stimson enlisted the support of the Grange in getting the legislature to fund a new building. Stimson invited the Grange to investigate the college. After visiting the campus, the Grange went, en masse, to the state capitol to support the request for additional funds. No room at the capitol was large enough to hold the people. The money was appropriated (Stemmons, 1931).

As president of the college he attended meetings of the American Association of Agricultural Colleges and Experiment Stations (AAACES). In addition to discussing college admission policies, courses of study, and other administrative matters, the group was concerned with agricultural instruction of secondary grade[5].

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5. By 1902 the AAACES had worked out, in considerable detail, a course of study to serve as a model for secondary schools contemplating offering agricultural instruction. The publication, Secondary Courses in Agriculture, contained this curriculum.

At the 1902 meeting of the AAACES Stimson heard President Cyrus Northrop of the University of Minnesota discuss the special agricultural school operated by the University of Minnesota (Stimson 1942). This school, somewhat typical of early agricultural schools, was of less than college grade, operated as a boarding school, and emphasized learning by doing through practice on the school farm. Stimson later visited this school.

At the 1904 meeting of the AAACES Stimson discussed the need for special training for boys who were going back to the farm. He indicated they did not need four years of college. He reported that a committee at Connecticut Agricultural College had worked out a two year course of study for these students (Stimson, 1905).

In 1906 Stimson made a presentation at the AAACES titled Student Labor (USDA 1907). It was common practice at that time to carry out the farming work of the university by using student labor. Stimson was against this. He was of the opinion that too many students stood around watching other students work and that forced labor on somebody else's farm was not ideal. His views were reflected in a paper he presented later to the American Association for the Advancement of Agricultural Teaching. In the paper he described an incident which dramatized why he did not advocate using student labor or school animals on school farms as the primary method for teaching students agriculture. Stimson was conducting a demonstration on how to judge Guernsey dairy cattle. After a young farmer had judged an extremely high quality bull, Stimson heard the young farmer state, "He ought to be a good one; the State owns him, and the State feeds him." Stimson noted, "Everywhere there is a tendency to discount college-owned or school-owned live stock and operations" (Stimson, 1912, p. 29).

Stimson twice served as chairman of the College Work and Administration section of the Association of American Agricultural Colleges and Experiment Stations. This group was influential in getting the National Education Association (NEA) to add a department of rural education to their organizational structure (U.S.D.A., 1907).

On February 20, 1908, Stimson's 40th birthday, the following news item was published in the Hartford Courant,

> Professor Rufus Whittaker Stimson, . . . has tendered to the trustees his resignation to go into effect at the end of the present year. Professor Stimson will become the executive head of an agricultural college that is to be established at Northampton, Mass., to be known as the Smith Agricultural School. Professor Stimson, to whom the offer has come unsolicited, has been at the Connecticut Agricultural College eleven years.

The accounts of Stimson's tenure as president of the Connecticut Agriculture College were favorable. One might question why Stimson would leave such a position for, what appears to be, a step down. It is this writer's belief that during Stimson's tenure as president, he was formulating the idea for a new way to teach agriculture, the home project method, and needed a place to try his experiment.

The Project Method is Implemented

In 1845, Oliver Smith of Northampton, Massachusetts died. In his will he left a fund of $30,000 to establish a farming school where young men could study agriculture. According to the terms of his will the bequest was to be allowed to accumulate. After a length of time, the people of Northampton were to elect a board of trustees and establish the school (Experiment Station Record, 1905).

In 1906, the trustees were elected and proceeded to establish the school. They first bought a farm and a herd of dairy cattle in preparation for the opening of the school (Stimson, 1942). Next, the trustees met with the state Commission on Industrial Education and discussed the search for a director. The chairman of the Commission, Paul Hanus of Harvard, recommended the trustees try to hire Rufus Stimson (Hanus, 1919). They did. The Commission approved Stimson as the new director of Smith Agricultural School.

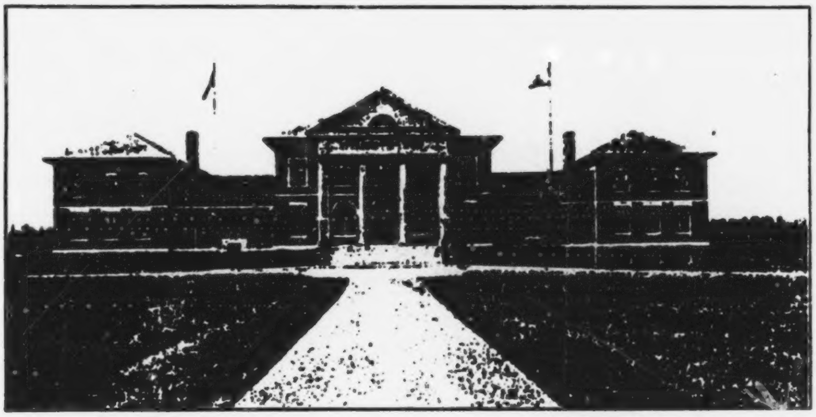

Figure 1. Smith's Agricultural School at Northampton, Massachusetts.

Stimson assumed the director's position in 1908. He had new ideas on how to teach agriculture. One of his first actions was to request permission from the trustees to sell the dairy herd. He also requested that no dormitories be erected to board the students. The trustees were puzzled but had been told by Dr. Hanus to let Stimson have free reign (Stimson, 1942). How could agriculture be taught without school owned livestock and a place for students to stay?

Stimson prepared a brochure about the new school. In the brochure he outlined a new plan for the teaching of agriculture. STUDENTS WILL LEARN AGRICULTURE AT THE SCHOOL BUT APPLY WHAT THEY HAVE LEARNED TO THEIR HOME FARMS THROUGH THE USE OF HOME PROJECTS. Based upon his experiences at the Connecticut Agricultural College and the empirical teachings of William James, Stimson believed this was the way agriculture should be taught.

During the 1908-1909 school year, Stimson worked diligently at developing the new school and installing the project concept. The project method of teaching soon proved to be successful (Thayer, 1928). Students applied modern agricultural practices on their own farms which increased student motivation. This culminated in increased agricultural productivity.

Figure 2. A student working his garden project.

Stimson's Project Method Gains Support

On November 15, 1909, a new Commissioner of Education was appointed in Massachusetts. The new commissioner, a professor of sociology at Columbia University in New York, had previously studied the problems of juvenile delinquents. He saw the need for a new type of education emphasizing vocations but his thinking about vocational education was still evolving. The name of the new commissioner was David Snedden.

In January 1910, Snedden brought one of his former graduate students to Massachusetts to serve as Deputy Commissioner for Vocational Education. This former student had taught high school English and science and had been a school superintendent in Indiana. When asked what he knew about vocational education, he ". . . replied that he 'didn't know a thing,' " (McKinny, 1956, p. 16). His name was Charles A. Prosser.

Both Prosser and Snedden were soon being educated by Stimson. They were impressed with the home project method used by Stimson (Snedden, 1917, 1929; Stimson, 1942). Stimson was not timid in sharing his philosophical views and beliefs with Prosser and Snedden.

Stimson also shared his views with another person Snedden and Prosser had recruited. This person, who later emerged as a prominent figure in vocational education for his task analysis expertise, was Charles R. Allen.

Stimson was asked to conduct a study, as a special agent of the department of education, on the need for expanding the teaching of agriculture in the state. Although Stimson conducted the research, the final report submitted in 1911 listed Stimson, Snedden, and Prosser on the report. This report stressed the need for additional programs in agriculture and indicated the project method should be used in any new programs (Monohan, 1912, p. 335). As a result of this report, the Massachusetts legislature passed new vocational legislation incorporating the suggestions in the report.

The Project Method Receives National Attention

In 1911, Snedden asked Stimson to join the state department of education as state supervisor for agriculture. During Stimson's first year with the Board of Education, he traveled widely espousing the project method. The Massachusetts home project method was receiving considerable attention nationally. The previous year Stimson had traveled to Chicago to help organize the American Association for the Advancement of Agricultural Teaching (AAAAT). At the second meeting in 1911, as State Supervisor, he presented a paper entitled "The Smith's Agricultural School and Agricultural Education in Massachusetts" (Stimson, 1912a). The annual Report of the Commissioner of Education for the United States in 1911 (Department of the Interior, 1912, p. 355) contained an article describing Smith's Agricultural School. Both reports described the project method.

Stimson addressed the National Society for the Study of Education in Mobile, Alabama in 1911. His paper, 31 printed pages in length, contained a detailed description of the project concept. The terms improvement project, experimental project, and productive project were described in detail. Stimson's (1912b, p. 35-36) definition of a farming project was as follows:

> A farming project is a thing to be done. A farming project is further, something to be done on a farm, which would involve a limited and definite amount of equipment, materials, and time, and which would be directed toward the accomplishment of a specified and valuable result. Finally, a farming project, as the term is here used, is a thing to be done on a farm, which, in the preparation for doing it and in the carrying of it out to a successful result, would involve a thoroughgoing educational process.

In 1912, the Massachusetts Board of Education published a bulletin written by Stimson entitled Agricultural Project Study. This bulletin was soon followed by a United States Bureau of Education bulletin (1914) called "The Massachusetts Home-Project Plan of Vocational Agricultural Education." Stimson was the author of this 104 page bulletin.

Prosser left Massachusetts in 1912 to become executive secretary of the National Society for the Promotion of Industrial Education (NSPIE) (Barlow, 1976). As executive secretary he was very active in promoting vocational education. He traveled widely and made many presentations about vocational education.

Prosser was an ardent supporter and advocate of the project plan of teaching (United States Commission on National Aid to Vocational Education, 1914). In June 1913, he organized a meeting at Staten Island, New York for the state supervisors of agriculture in several Eastern states. Hawkins of New York, Dennis of Pennsylvania and Carris of New Jersey were three of the supervisors at the meeting. Also at the meeting was William T. Bawden, a journalist who was managing editor of Vocational Education. Prosser had Stimson speak about the project method. After describing the project method, Stimson invited the conference participants to accompany him to Massachusetts to observe this new method first hand (Heald, 1929; Stimson, 1942). Willingly, they accepted the invitation and spent several days with Stimson visiting schools, teachers and student projects[6].

The November 1913 issue of Vocational Education (p. 86-105) contained an article by Bawden titled "Types of Massachusetts Agricultural Schools". Bawden expressed his views of what he observed with Stimson in Massachusetts. In describing the results of the project method of teaching and the agricultural schools Bawden writes, ". . . the new kind of school is training in vocational efficiency, is developing boys and girls (underline mine) of energy and initiative, is fostering a spirit of independence and perseverance, and is accustoming young people to the experiences of successfully coping with real difficulties."

In 1915, an article entitled "The Massachusetts Home Project Plan of Vocational Agricultural Education" appeared in The School Review (a national journal of secondary education). The article was written by Stimson. A footnote indicated that the article was based on an address presented to the Harvard Teachers Association during which Stimson used colored lantern slides.

W. W. Charters, Dean of Education at the University of Missouri (and later Dean at the University of Illinois), visited Stimson in 1915 and observed the project method in action. Charters, a disciple and former student of John Dewey, was a noted curriculum theorist and a strong advocate of the problem solving method of teaching (Stewart, 1933). Charters was impressed with what he saw and said the project method was problem solving raised to the Nth degree (Stimson, 1942).

The Panama-Pacific International Exposition was held in San Francisco in 1915. This was an international exposition comparable to a world's fair. The state of Massachusetts had an exhibit at the exposition on State-aided vocational education (Foght, 1917a). The agricultural school movement and the project method was the focal point of the exhibit. Stimson was the main person responsible for the display. This exhibit won the Grand Prix (gold medal) award (Stimson, 1919, Kornegay, 1978).

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[6] Hawkins later became the chief of agricultural education for the Federal Board for Vocational Education and Dennis become executive secretary of the American Vocational Association. In these positions they were able to promote the project on a national scale.

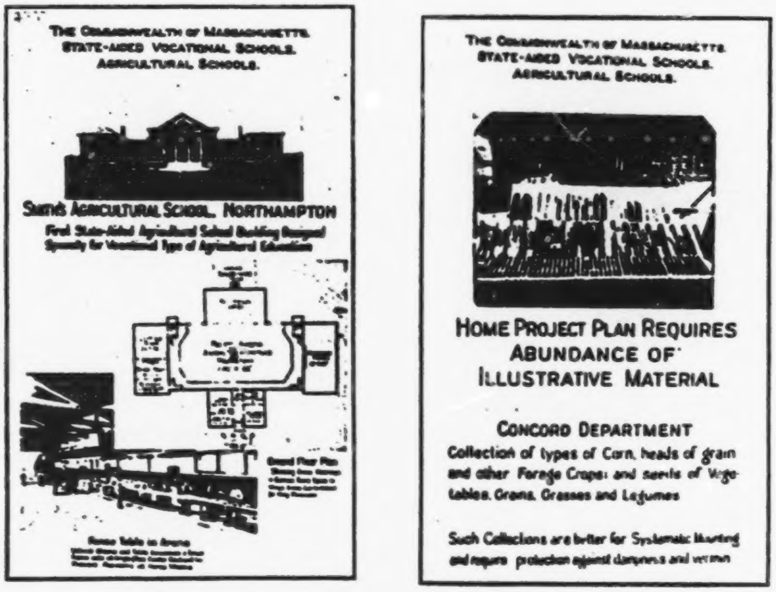
THE COMMONWEALTH OF MASSACHUSETTS
STATE-AIDED VOCATIONAL SCHOOLS.
AGRICULTURAL SCHOOLS.
SMITH'S AGRICULTURAL SCHOOL, NORTHAMPTON
THE COMMONWEALTH OF MASSACHUSETTS
STATE-AIDED VOCATIONAL SCHOOLS.
AGRICULTURAL SCHOOLS.
HOME PROJECT PLAN REQUIRES ABUNDANCE OF ILLUSTRATIVE MATERIAL
CONCORD DEPARTMENT
Collection of types of Corn, heads of grain and other Forage Crops and seeds of Vegetables, Grains, Grasses and Legumes
Such Collections are better for Systematic Mounting and require protection against dampness and vermin

Figure 3. Part of the exhibit from the Panama-Pacific International Exposition.

The Project Method and the Smith-Hughes Act

In 1917, the Smith-Hughes Act was passed by congress and signed into law. One provision of the Smith-Hughes Act was "That in order to receive the benefits of such appropriation . . . such schools shall provide for directed or supervised practice in agriculture . . . ." The NSPIE was responsible for most of the provisions in the Act and it was no secret that Prosser drafted the original bill (Barlow, 1976). According to Deyoe (1943) and Thayer (1928) there was no doubt the work of Stimson served as the model for the supervised practice aspect of the legislation.

The Federal Board for Vocational Education was organized in August of 1917. Prosser became the Board's chief administrative officer. Layton Hawkins was brought from New York to head the agriculture work. Both men had learned about the project method of teaching from Stimson and had been exposed to his philosophy. The members of the Federal Board spent the first year establishing policy for the organization and administration of vocational education (McCarthy, 1952). Bulletin No. 21 (Agricultural Series No. 3) was published in 1918. It was The Home Project as a Phase of Vocational Agricultural Education. Hawkins (1929) acknowledged that the bulletin and project concept was based on Stimson's work.

Stimson remained busy during 1917. He continued serving as state supervisor, was assisting Paul Hanus with an evaluation of Hampton Institute in Virginia (Hanus, 1937) and was working on a book describing the project method of teaching. In 1919 the Macmillan Company published Stimson's 468 page book, Vocational Agricultural Education by Home Projects. The book had been scheduled for publication in 1918 but was delayed because of the war effort. Stimson's book served as a reference for the spate of books on the project method which followed.

The Project Concept is **PLAGIARIZED**

In June 1918, Stimson presented two papers at the annual meeting at the National Education Association. One of the papers, "Effect of Rural Continuation School on Agricultural Efficiency," described several benefits of home projects. Another educator who also presented a paper at the 1918 NEA conference was William Heard Kilpatrick (NEA, 1918)

William Heard Kilpatrick, a noted professor at Columbia University, published an article in the September 1918 issue of the Teachers College Record titled "The Project Method." The article went into considerable detail discussing the merit, basic assumptions, and value of the project method. The article was well written and pedagogically sound. Kilpatrick made a statement (p. 320) in the article, which many people may have ignored; he said, "I did not invent the term [the project method] nor did I start it on its educational career. Indeed, I do not know how long it has already been in use." Later in his book Foundations of Methods (1925) Kilpatrick wrote, ". . . the merits of purposeful activity [referring to the project method] depend on how well it will work if given a fair chance and not at all on the name assigned to it and still less on who first used the name."

Kilpatrick's books, articles and presentations about the effectiveness of the project method received national attention and acclaim. His works have been cited many times. An entire issue of Educational Theory was published in 1966 in honor of Kilpatrick. In this issue several distinguished authors told how the project method of teaching was used around the world. They espoused the project method as one of the greatest events to have occurred in education. It revolutionized education. During the excitement over the success of the project method, Kilpatrick came to be known as the genius behind the project method of teaching. His 1918 article and treatise in Foundations of Methods contributed to the misconception that he was the originator of the project method. Rufus Whittaker Stimson, the real father of the project method, had been forgotten.

A question could be raised concerning the validity of Kilpatrick's claim in 1918 that he did not know who originated the project method. Just a year earlier a graduate student, Theodore H. Eaton, at Teachers College of Columbia University published his dissertation, A Study of Organization and Method of the Course of Study in Agriculture in Secondary Schools. This publication was No. 86 in the Contributions to Education series of Teachers College. Eaton (p. 106) writes, "The use of the home project as a means to teaching agriculture is growing very rapidly. Chief credit for its development and spread is due to Dr. R. W. Stimson of Massachusetts."

Kilpatrick also made a presentation at the same NEA meeting earlier in the year in which Stimson discussed the project. As a professor interested in education, it is hardly conceivable that Kilpatrick had missed the eleventh yearbook of the National Society for the Study of Education (which contained Stimson's 1911 presentation), the publicity surrounding the Panama-Pacific Exposition, or Stimson's 1915 article in The School Review. Given Stimson's penchant for publicity, it is difficult to believe that Kilpatrick was not aware of Stimson's work.

It is equally hard to believe that Kilpatrick did not know nor care about the origin of the project method. When Kilpatrick was a graduate student, he was given the assignment of determining which was the first school in this country - the Boston Latin School or the Village School of New Amsterdam. Though both schools claimed to be first, it was generally accepted that the New Amsterdam school was the first in 1633. Kilpatrick conducted intensive research on the problem. He consulted Ecclesiastical Records of New York, sailing schedules from the old world, and other sources which most historians had failed to check. He proved, beyond a shadow of doubt, that the accepted views were wrong. Tenenbaum (1951, p. 71) reported "His findings created quite a stir in educational circles." Based upon this exacting research he obtained a part-time position teaching the History of Education at Columbia University. It is hard to imagine that a person with this type of background would say that it was unimportant to know the origin of the project concept.

An explanation for Kilpatrick's denial of the origin of the project method, could possibly be found in his personal diary. Tenenbaum, who was given access to Kilpatrick's diary while he wrote William Heard Kilpatrick, Trail Blazer in Education (1951), provides several revealing facts. Apparently, Kilpatrick was afraid he would never achieve a reputation based on his own merit. His major contribution to educational thought had been to clarify the positions of Dewey (his mentor). In his personal diary, he constantly demeaned his own ideas and abilities. He was full of doubts. His diary entry for January 1, 1914 contained the following statement, "My success is much better as a teacher and student than as an investigator or original thinker. While I hope to become well known as a teacher and a writer, I have no reason to hope to make specific contributions to thought." (Tenenbaum, 1951, p. 88). It is this writers opinion that Kilpatrick saw the project concept as a chance for him to become know for something other than clarifying Dewey's work. This view is reinforced by an event in 1920.

One of Kilpatrick's doctoral students (Herring, 1920) decided to compile a bibliography of all the work which had been done on the project method. In his article, which was published in the Teachers College Record, the student wrote, "Indebtedness is acknowledged to Professor William Heard Kilpatrick of Teachers College, for suggesting that the bibliography be made, for beginning the collection of titles, and for criticizing the annotations." The student (p. 150) also stated, "Time has unfortunately prevented collection in some fields where contributions have been made. A discriminating annotated bibliography of the project method in **AGRICULTURE** (emphasis mine) is needed but is not included." Who decided not to include citations about the project method in agriculture? Was it the graduate student, or Kilpatrick?

Several professors at Columbia and at other universities were critical of Kilpatrick. These professors intimately knew of the work of Stimson. W. W. Charters was one of the critics. After visiting Stimson in 1915 Charters became a strong advocate of the project method. The writings of Charters (1923, 1924) and his graduate students (most notably Stevenson in 1921) acknowledge the role of Stimson in developing the project concept and criticize the definition of the project used by Kilpatrick.

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Another professor who was critical of Kilpatrick was David Snedden. He had left Massachusetts in 1919 to rejoin the Columbia faculty. Tenenbaum (1951, p. 140) reports that Snedden was "a severe critic" of Kilpatrick's work. Perhaps one reason Snedden was critical of Kilpatrick was because he wanted to claim credit for the project method. Branom in The Project Method of Education (1919. p. 30) quotes Snedden thus, "In the early part of the present century 'some' of us began using the word 'project'. . ."

An unbiased account of the evolution of the project method is found in V. T. Thayer's The Passing of the Recitation (1928). Thayer, a noted educational philosopher, wrote several important books during the first half of the twentieth century. He was a contemporary of Kilpatrick. He collaborated with Kilpatrick, Dewey, Bode, and others to write The Educational Frontier which was edited by Kilpatrick in 1933. In The Passing of the Recitation Thayer (p. 229) wrote:

> Some twenty years ago R. W. Stimson, at the time a representative of the Massachusetts Board of Education, devised a plan for revitalizing the teaching of agriculture in the vocational high schools of Massachusetts. . . . What Mr. Stimson proposed to do was to supplement the regular class work of the school with home projects. Thus in the Smith Agricultural High School at Northampton a trained teacher was employed for the summer months of 1908 to assist and direct boys in selecting and carrying on appropriate home tasks, which tasks should involve the concrete application of principles already learned in the school.
>
> This plan was successful from the start. Consequently, in 1911, the Massachusetts Legislature agreed to pay two-thirds of the salary of specially qualified teachers whom a selected list of high schools might employ. In this action Massachusetts set the standard for a new departure in vocational education. Other states very soon followed her lead and in 1917 the Smith-Hughes Law gave to supervised home project work a national character and federal support. . . .
>
> On the face of it, the policy thus inaugurated in Massachusetts does not seem to involve a revolutionary procedure in teaching; but it seems, nevertheless, to have been the occasion, if not the cause, for releasing a veritable torrent of educational discussion and stimulating most significant experiments in teaching method and curriculum organization. What began as a simple endeavor to facilitate the application at home of what a pupil learns in an agricultural school, has developed into a proposed 'method' for reorganizing the entire school curriculum; and the term 'project method' is now used by no less an authority than William Heard Kilpatrick in order to characterize the most adequate provision for the guidance and direction of the learning process.

From the preceding account it should be clear that Stimson was the true father of the project method and that Kilpatrick built upon the foundation provided by Stimson. Even though Stimson referred to himself as the originator of the project method in a number of articles and presentations, he did not take issue with nor express bitterness towards Kilpatrick in his subsequent writings concerning the origin of the project method. Stimson (1922a, 1942) acknowledged that Kilpatrick had been influential in clarifying the project concept and had spread the word about the project method of teaching. In 1942, Stimson (p. 604) quoted Kilpatrick's work concerning the project method. Stimson said, "Morale in vocational agricultural education has been heightened by the evidence, above cited [referring to Kilpatrick's writings], of determination to make project teaching principles function for the enrichment of learning in nonagricultural fields."

STIMSON'S OTHER CONTRIBUTIONS TO AGRICULTURAL EDUCATION

Even though historical evidence indicates the project method of teaching was Stimson's greatest contribution to agricultural education (and to the universe of education) he made several other important contributions which have made an impact on the profession.

Itinerant teacher training

Heald (1929) recognized Stimson as the founder of the itinerant teacher-training approach to preparing teachers. In the Massachusetts section of The History of Agricultural Education (1942, p. 200) it is reported that "During the period from 1910 to 1918 all of the vocational agriculture teacher training in Massachusetts was conducted by the State supervisor, Rufus W. Stimson, with such temporary assistance as he was able to draft. Most of the new teachers were farmers, some with little college training and most of them without any courses in education. This presented the problem, as Mr. Stimson phrased it, of 'teaching teachers how to teach while they are teaching.' It [itinerant teacher training] has continued to be an essential part of the teacher-training service in the State, even since the more thorough development of the preemployment training at the college."

When Stimson supervised in a school he had two functions - teacher training and state supervision. He did not take his responsibilities lightly. Lathrop, commenting on Stimson, wrote (1947, p. 29) "When he visited a department he went over it with a fine-tooth comb. No details were overlooked. He was the most thoro (sic) supervisor I have ever observed in action." Not only did Stimson visit the school he insisted on visiting the project work of the students. Stimson personally visited every high school student in the state who was enrolled in agriculture during his tenure as state supervisor (Lathrop, 1938; Heald, 1929; Works, 1929).

Bawden, after his 1913 visit in Massachusetts, pointed out that Stimson's visits were not merely supervisory and inspectional but also furnished guidance and help for the teachers. During the drives to and from student projects Stimson would spend considerable time reviewing the days lessons with the teacher and providing suggestions for improvement of teaching.

Figure 4. Supervisor Stimson in the Brimfield Agricultural Department.

Stimson was vitally concerned with the improvement of teaching. An address before the American Association for the Advancement of Agriculture Teaching in 1918 appears to have had much to do with the wide prevalence of the phrase "teaching teachers to teach while they are teaching" (Heald, 1929). Stimson's views on providing inservice education to teachers were highlighted in the fourth publication in the Agricultural Series of the Federal Board for Vocational Education (1918). He had specific suggestions for the professional improvements of teachers[7]. In 1918, while most states were scrambling to get some type of teacher training started, Stimson had already been working with teachers for nearly ten years. It should not be surprising that the views of Stimson related to the preparation of teachers were closely heeded.

Traveling Seminars

"Most men see better than they visualize." This statement was made by Stimson in 1918 (p. 30). He believed the best way to get his teachers to adopt new practices and improve their programs was to see the ideas in practice. Therefore, he regularly organized traveling seminars as a part of the professional workshops he conducted for teachers. During Stimson's tenure as supervisor there was a professional improvement workshop the week before Christmas and a second one week professional improvement workshop during late July (Stimson, 1918). It was a common practice for Stimson to use the July workshop for "A conference on 'wheels' . . ." (Heald, 1929, p. 4).

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[7] One should remember that according to the policies (Bulletin 1) of the Federal Board for Vocational Education the supervisor in each state was responsible for overseeing the teacher training function.

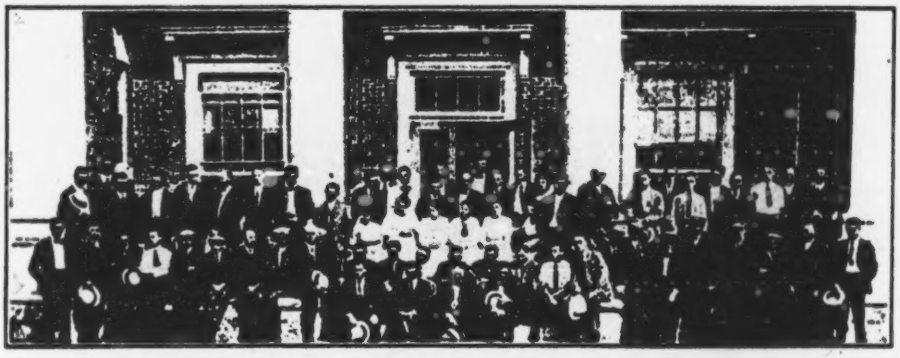

Figure 5. Stimson's "Conference on Wheels" visits the Bristol County Agricultural School.

In discussing the traveling seminar Stimson (1919, p. 365) wrote,

> A man scheduled to open a discussion opened that discussion on his own premises. His discussions had not only the force of his words and of his reasoning; it had, also, the force of his example. His fellows could see that he had what he said he had to work with; and that he did with it what he said he did. In particular, the achievements of his pupils were judged on the spot. Home projects were visited, school projects were looked over, and calls at notable farms were made en route. Such conferences bring theory down to the bed rock of practice. They make possible the most intimate and personal exchange of ideas. They promote pleasant fellowship in service. They impress the individual instructor that his school or department is not a one post of solitary endeavor, but part of a movement state-wide in its sweep. And they tend to elevate educational practice everywhere to the highest level found. The author is of the opinion that in this field of education, at least, no summer conference can be made so valuable as can the conference that is held on wheels.

Task Analysis

Stimson was the first person in agriculture to use task analysis in developing the curriculum (Charters, 1923; Heald, 1929). He began using the task analysis procedure in 1911 in conjunction with home projects (Stimson, 1922a). Stimson asked his teachers to take the projects of their students and determine what tasks were involved in each of the projects. The listing of the tasks served as outlines for instruction. These task outlines were

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duplicated and distributed to the teachers. Because of his experience with task analysis, Stimson addressed the National Society for Vocational Education in 1922 on the topic "The Relationship of Occupational Analysis to the Project Method" (Stimson, 1922b).

No Sex Discrimination in Agriculture

Stimson wrote (1922a, p. 95),

> We may feel that a man is better muscled than a woman to meet the physical stresses and strains of farming; and that, for this reason, vocational agriculture is more appropriate for a boy than a girl. And we may feel that mixed classes in some phases of project teaching are not desirable. Nevertheless, now and then a woman owns a farm upon which she is dependent for a living, and now and then a girl has an unmistakable bent for farming. Year after year, girls have demonstrated that they can profit from our vocational agricultural education. Under such circumstances, we must, of course, agree, that there can be no discrimination as to sex in our entrance privileges.

These were not idle words. An examination of Stimson's book, Vocational Agricultural Education by Home Projects (1919), reveals that he had girls in agriculture at Smith's Agricultural School.

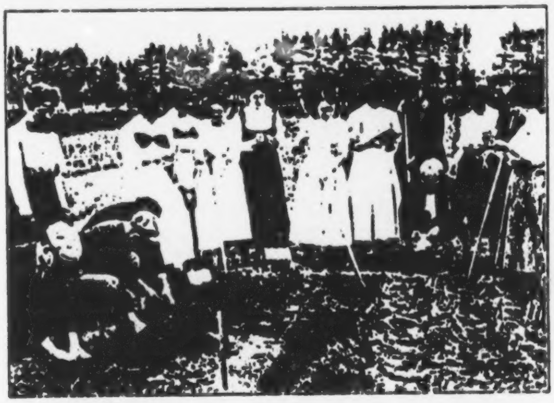

Figure 6. A picture taken at Smith's Agricultural School. The picture speaks for itself.

Advisory Councils

Many people in agriculture education attribute the advisory council concept to H. M. Hamlin. While Hamlin probably did more to promote the use of advisory committees than any other agricultural educator (Camp and Crunkilton, 1985), it was Stimson who first advocated the idea. Hamlin (1952, p. 177) wrote, "The author [referring to himself] has traced the use of advisory councils in agricultural education back to 1911. Rufus W. Stimson . . . apparently originated the first advisory group in this field . . ." In the 1911 report to the Massachusetts legislature several ideas were presented by Stimson, Snedden, and Prosser which were incorporated into legislation passed in the same year. One of these concepts was the use of an advisory council (Fought, 1917). Some of Stimson's (1919, p. 190) views concerning the advisory committee included "The advisory committee of a department is made up of the best practical farmers, varying from five to fifteen in number, from the neighborhoods from which pupils are expected. The committee must be composed of employers and employees. Each committee usually has at least one woman member . . ."

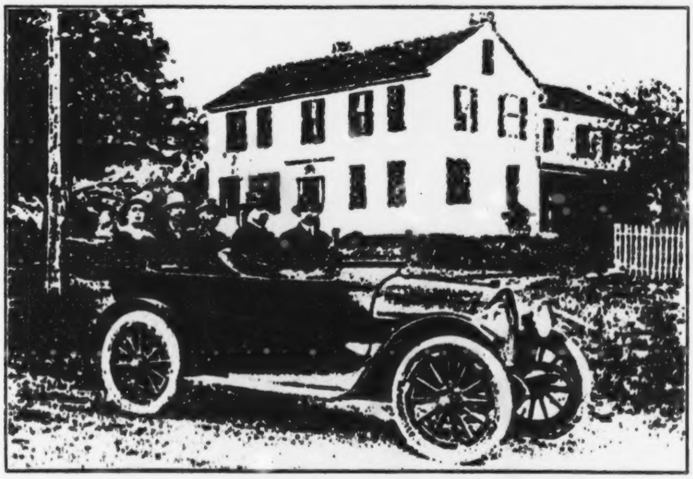

Figure 7. Three members of the Brimfield advisory committee are in the back seat. Stimson is driving. The agricultural instructor is sitting with Stimson. They are visiting student projects.)

Adult Education

After the Smith-Hughes Act was passed attention was paid primarily to developing programs for youth. Virtually no thought was given to instruction for adults even though the Smith-Hughes Act listed adults before youth in describing the purposes of vocational agriculture. It was not until 1921 that the Federal Board conducted a study to determine if there was a need to provide education in agriculture for adults (Fleenor, 1932). It was not until 1923 that a bulletin concerned with adult work in agriculture was published by the Federal Board. In 1929, the Federal Board hired an adult education specialist in agriculture. Although the Federal Board was slow in recognizing the need for adult education, Stimson was not.

In Foght's (1917) book, The Rural Teacher and His Work, the adult education program in agriculture in Massachusetts is discussed. Foght (p. 215) writes, "No other state probably has been quite so successful as Massachusetts in organizing vocational education for all its people, whether living in town or

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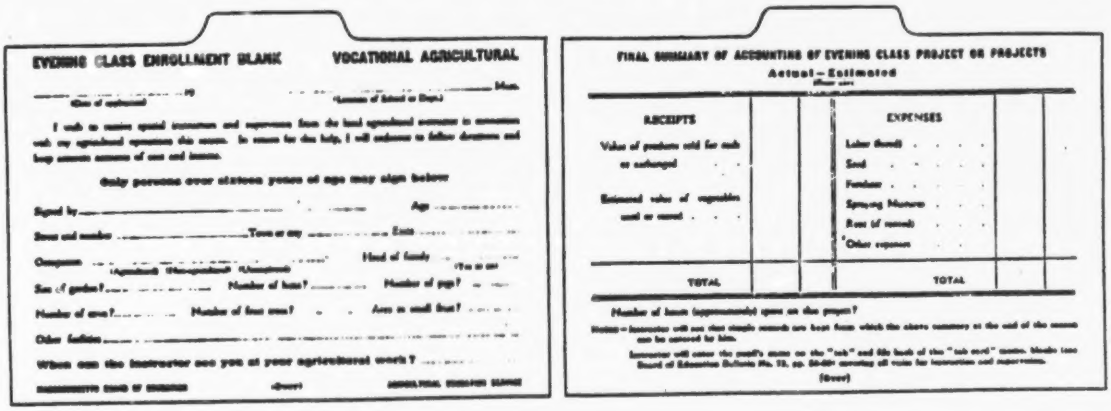
in the country. These schools comprise not alone day schools for boys and girls, but part-time schools for young people between fourteen and sixteen years, and also evening schools for grown men and women. The aim is to reach all the people of the commonwealth in need of help." Foght (p. 217) goes on to describe the three types of programs as they relate specifically to agriculture. The third type is designed for "Persons above seventeen years of age, regularly engaged in productive agriculture, who devote evenings to study at the schools. This group includes dairymen, truck-farmers, fruit-growers, etc." Fought describes the benefits of the program and concludes (p. 217), "Much of the success is due to the thoroughgoing supervision employed. The state supervisor [Stimson] cooperates closely with each local instructor . . ."



EVENING CLASS ENROLLMENT BLANK VOCATIONAL AGRICULTURAL

Age

FINAL SUMMARY OF ACCOUNTING OF EVENING CLASS PROJECT OR PROJECTS

Actual—Estimated

RECEIPTS			EXPENSES		
TOTAL			TOTAL		

Figure 8. The front and back of the enrollment form for adult education programs in agriculture in Massachusetts.

In Stimson's book (1919, p. 256) the conduct of evening schools for adults in agriculture was discussed. It appears Massachusetts, under Stimson's guidance, led the way in school based adult education in agriculture in the United States.

Advocate of Balanced Education

In the formative years of vocational agriculture many people were opposed to this "new" type of education. A number of people did not view agriculture as being worthy of study. The classical school of thought was still prevalent during the early 1900s. Stimson, whose formal education was about as classical as you could get, was a strong advocate for a balanced education that stressed the cultural as well as the vocational (Stimson, 1919, 1932, 1933, 1937). In describing what the vocational agriculture student should learn Stimson (1937, p. 101) wrote, ". . . the vocational agriculture pupil will be given the best his high school has to offer in disciplines good for us simply because we are human beings. These should include mastery of the mother-tongue, acquaintance with the best things that have been thought and said and done in the world, anywhere, anytime, and by anybody . . ." Having a person with Stimson's background and training arguing for a balanced education, one which included vocational education, did much to advance vocational education.

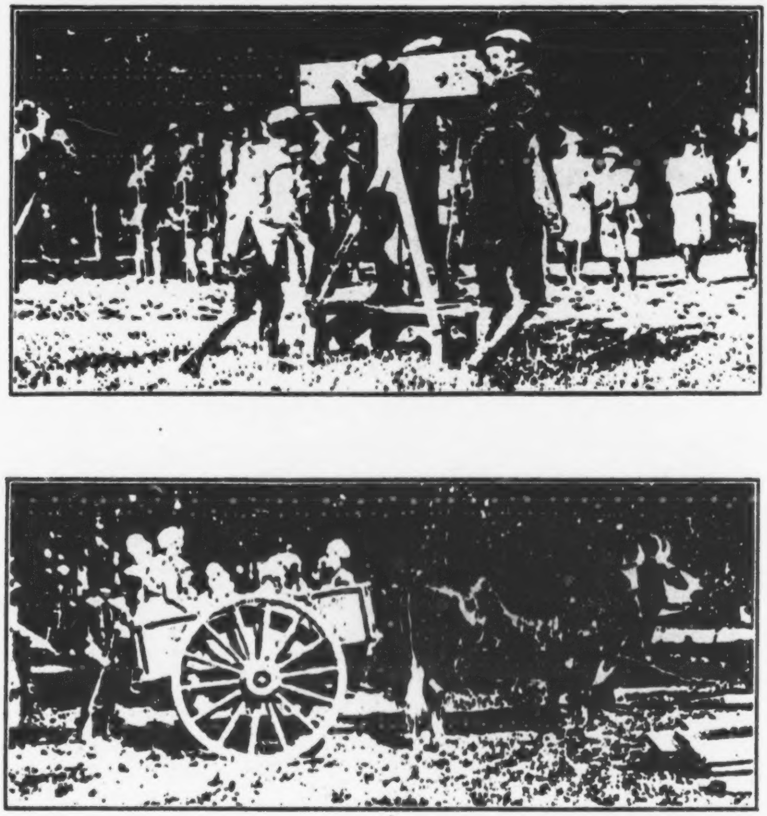


Figure 9. Students at Smith's Agricultural School in a historical pageant.

Additional Contributions of Rufus Stimson

In referring to Stimson's contributions in agricultural education, Carris (1929, p. 4) stated, "It would be easier to write pages than sentences . . ." This is certainly true. Following is a brief list of additional contributions of Stimson.

1. Prolific Writer. Stimson authored more than 18 articles in *Agricultural Education*. He served as associate editor of the *Vocational Education Magazine* during the 1920s and authored several articles in that magazine. He also wrote articles for the *Quarterly of Alpha Zeta*, *Business America*, the *New England Homestead*, the *Congregationalist and the Christian World*, the *School Review* and *American Education*.

2. Compiled the History of Agricultural Education. The 1942 publication of the History of Agricultural Education stands alone as the most authoritative work on the history of vocational agricultural education. Stimson also wrote the history of agricultural education in Massachusetts which was 330 pages long.

3. President of the AAAAT. Stimson helped organize and later served as president of the American Association for the Advancement of Agricultural Teaching[8]. He was active in this group and often presented papers. It is this writer's opinion that Stimson was able to leave his philosophical imprint on many teacher educators, including Hamlin who was active in this organization, through their association in the AAAAT. Shinn (1942, p. 577) indicated the discussions of the AAAAT ". . . have contributed to the development of a sound philosophy of vocational education and to improved methods of teaching agriculture in the secondary schools."

WHAT WOULD STIMSON SAY TO THE PROFESSION TODAY?

If Stimson were alive today he would have several things to share with the profession. Based upon his writings and the writings of those who knew Stimson, it is my belief that the following message would probably resemble what he would say to the members of the vocational agricultural education profession:

> My friends, most of you know of my background. I studied under William James and have a strong leaning toward philosophy, rhetoric, and theology. I have long advocated the need for a balanced education. It should be evident from my writings that I believe every students should be broadly educated. I want students to be able to speak properly, spell correctly, and write clearly. It is also my belief that a truly broad education consists of both classical and practical studies. Therefore, it pains me greatly to see the current rush toward purely academic education at the expense of vocational education.
>
> Around the turn of the century most schools in the country were stressing only the academics. As a result students rarely completed school (three out of every 100 who entered first grade). The education of the students who did complete school was designed to prepare them for college, not necessarily for life. The teaching methods used tended to be rote memorization, book learning, and recitation. There was no emphasis on solving problems or thinking. Education was abysmal to say the least. I know, I was there. My idea of teaching through projects with

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[8] The AAAAT was started in 1910 and disbanded in 1932 when it was decided the work of the group could be carried on in the agricultural section of the American Vocational Association.

practical application was widely accepted because it was a welcome relief from the primarily ineffective education system. The project method is philosophically sound. My idea was to balance education.

It is with sadness that I view the current trend; a return to the education of the early 1900s. The balance is being lost. I predict an increase in drop out rates and an education system which responds to the needs of the universities instead of the needs of society.

What may be equally as sad is the fact that no one in the agricultural education profession appears to be concerned about this. At least I haven't seen or heard any reaction from the members of the profession. I have not seen any articles from agricultural educators in the Kappan, Educational Leadership, Harvard Educational Review, or any of the other general education journals advocating strong general education and strong vocational education.

In the old days, my colleagues and I were active in writing about vocational agriculture in a variety of journals. If you examine my publishing record you will see that I spread the gospel of vocational education in agriculture in such journals as Business America, Congregationalist and the Christian World, School Review, and the New England Homestead. Today, you talk to each other, but don't talk to those outside of agricultural education. Yet, those outside people will be the ones to take agricultural training away from the youth and adults if you do not see to it that these outsiders are informed of the value of vocational education.

I'm not aware of you going before Congress, state legislatures, general teacher groups, or even farm groups to build support for a balanced approach to educational reform. You need to present your views to the public and the education profession at large. When I faced major problems as president of Connecticut Agricultural College I went to the public, farm groups, and anybody else who would listen.

It appears to me that you talk to yourself and write articles only in your own little circle of journals. Doesn't the profession have any spokesmen or thinkers? For some time I have been concerned about the focus of your research and writing. It appears to me that you are researching and writing about minutiae. The profession is facing some major problems but no one appears to be addressing these major problems. I do not mean to be overly harsh. I am aware that a handful of people are looking at the big issues but, by large, the majority of the professional membership is not.

You have a solid philosophical basis for what you are doing. I'm not sure, however, if you are aware of it. You need to re-examine your historical and philosophical heritage. Some of us old timers had some good, sound ideas you need to study. You can learn from the past. I am glad to see a few of you starting to do this.

Before I conclude, let me make a few other statements about the actual operation of the vocational agriculture program of today. It gives me pleasure to see the renewed emphasis on the project or SOEP as you now call it. The project method is philosophically sound and makes agriculture truly vocational. There was considerable slippage concerning projects a few years back but you are turning that around. Keep it up.

I would like to see you do something about the serious erosion that has occurred with your adult programs. In a few states that component is still strong but is has deteriorated in many other states. When we were working on the Smith-Hughes legislation we meant education in agriculture to be for both adults and youth.

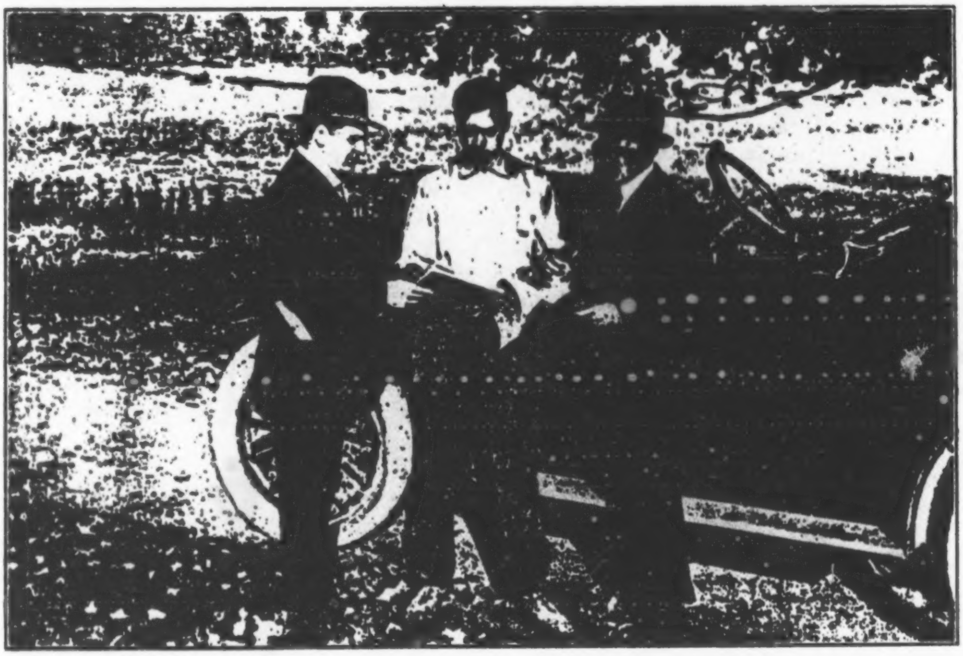
Don't forget to use your advisory committees. They can provide valuable input. You have to keep in touch with the community.

The agricultural education profession is facing some major problems. However, don't forget that we laid a solid foundation for you many years ago. I am confident that you will be able to carry on.

Some Final Words

Lamar (1965, p. 18), in a call for leadership from the profession wrote:

> Our early leaders in agricultural education had very few guidelines. They were called on to blaze a new trail and develop a new program. They had the responsibility to develop a theoretical foundation for vocational education in agriculture which is essential for any sound program. Theirs was the task to develop a basic philosophy and formulate the aim and objectives to serve as guidelines for program development and evaluation.
>
> If agricultural education, in the emerging era, is to serve the vocational education needs of the agricultural industry as well as it has done so in the era just ended, leaders in agricultural education must acquire the same kind of vision, desire, dedication, and capability that characterized the leaders who have carried us to this point.



Where are you when we need you, Rufus W. Stimson?

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ATTITUDES TOWARD AND UTILIZATION OF COGNITIVE SKILL DEVELOPMENT AMONG AGRICULTURAL EDUCATION FACULTY IN THE UNITED STATES

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INTRODUCTION

Since the 1980s, a plethora of reports and studies have decried the deterioration of the educational system in the United States, including teacher training programs. Major recommendations for the improvement of teacher education programs have included higher entrance requirements for entering students, competency testing of beginning teachers, stiffer graduation requirements, more emphasis on supervised student teaching, more credit hours in subject matter areas, and the development of five-year programs (Winkler, 1985).

The reports have also emphasized the need to develop thinking skills among students of all ages. With the subject matter orientation of the proposed teacher education reforms, will future teachers be prepared to teach for thinking or cognitive skill development?

In agricultural education, cognitive skill development, thinking, has probably been most visible in the problem-solving approach to teaching (Phipps, 1980; Krebs, 1967). Before major changes in agricultural teacher education programs occur as a result of the educational reform reports and legislative action, an investigation of the current state of cognitive skill development within agricultural education programs at the university level appeared warranted. What attitudes do agricultural education professors hold toward cognitive skill development? What thinking skill techniques are they using in their own classes? Do they set course goals that facilitate cognitive skill development among their students?

PURPOSE AND OBJECTIVES

The study´s major purpose was to determine agricultural education professors´ attitudes toward and use of cognitive skill development within the university classes they teach. Specific objectives were to:

1. Determine the attitudes of agricultural education professors toward cognitive skill development.
2. Identify the factors which most influence agricultural education professors when they establish course goals for their classes.
3. Determine agricultural education professors´ perceptions regarding their own use of teaching techniques to stimulate their students´ cognitive skill development.
4. Identify selected demographic variables that may have a bearing on agricultural education professors´ attitudes toward and use of cognitive skill development.

PROCEDURES

The population for the study was all agricultural education faculty in the United States. To be included in the population, individuals had to hold a minimum rank of assistant professor, be employed by a four-year, post-secondary educational institution within the United States, and be listed in the 1984-1985 Directory of Agricultural Teacher Educators.

Of the 319 individuals identified, a random sample of 176 faculty was drawn by using a microcomputer random numbers generation program.

A descriptive research method was used with data collected through the use of a four-part questionnaire designed to help fulfill the study's objectives. Alpha was set at .10 because of the study's exploratory nature.

The questionnaire contained 36 attitudinal items measuring respondents' beliefs toward the cognitive learning theories and another 36 items ascertaining respondents' use of cognitive skill development techniques within the classes they taught. In addition, respondents were asked to prioritize five sources of course goals and to provide demographic information.

The Certainty Method of Response was used to measure attitude and use with an 11-point scale transformed to a 16-point scale as recommended by Warren et al. (1969).

Test reliability using Cronbach's alpha was .73 for the attitudinal measure, after the removal of six items from the composite score, and .78 for the utilization measure with no items removed.

Validity was established through the literature, a panel of agricultural educators at Iowa State University (ISU), and an educational psychologist also from ISU.

RESULTS

Agricultural education professors had a positive attitude toward cognitive skill development with an estimated composite mean of 10.34 on a 16-point transformed attitude scale. They also indicated a frequent use of cognitive skill development techniques with an estimated composite mean of 9.64.

As shown in Table 1, a significant mean difference was found in the attitude composite scores when professors were grouped according to their major teaching level. Those teaching primarily at the graduate level had an average attitude composite score of 10.64, while those teaching at the undergraduate level had an average attitude composite score of 10.17 ($t=-2.38$; $p=.02$). A similar finding was made between the professors' frequency of use scores and their major level of teaching. Professors with graduate level teaching as their primary teaching responsibility had a significantly higher frequency of use composite score ($\bar{x}=9.84$) than did those professors with primary responsibility for undergraduate teaching ($\bar{x}=9.51$; $t=-1.82$; $p=.06$).

Using t-tests, further analyses of the attitude and use composite scores were made by grouping professors according to 14 areas of specialization variables and 14 courses taught variables. The independent variables for measuring both specialization areas and courses taught were: (1) introduction to agricultural education, (2) teaching methods, (3) philosophy, (4) Future Farmers of America, (5) Supervised Occupational Experience Programs, (6) leadership, (7) guidance, (8) microcomputers, (9) instructional media, (10) program planning, (11) supervision and administration, (12) evaluation, (13) curriculum, and (14) other.

Only one significant mean difference was detected when professors' attitude composite scores were grouped according to areas of

Table 1. Means, standard deviations, and t-values of the learning theories attitude composite score and frequency of use composite score by selected independent variables

	Attitude			Use		
		Mean	t		Mean	t
Independent variable	n	s.d.	p	n	s.d.	p
Major area of responsibility						
Teacher education	101	10.33	0.16	101	9.61	-0.25
		1.00	.871		0.92	.808
Non-teacher education	23	10.29		22	9.67	
		0.86			1.22	
Major level of teaching responsibility						
Undergraduate	88	10.17	-2.38	87	9.51	-1.89
		0.84	.020		0.94	.062
Graduate	46	10.64		46	9.84	
		1.20			1.04	
Time budgeted for administration						
No administration	80	10.37	0.27	80	9.57	-1.38
		0.95	.786		1.09	.169
Some administration	50	10.31		50	9.79	
		1.11			0.80	
Nature of class enrollees						
Homogeneous	37	10.26	-0.51	36	9.73	0.64
		1.00	.609		1.04	.523
Heterogeneous	101	10.36		101	9.60	
		0.99			0.97	

specialization and courses taught. As indicated in Table 2, professors with a specialization in supervision and administration had a significantly higher attitude composite score ($\bar{x}=10.60$) than did professors without that specialty ($\bar{x}=10.23$). No significant differences were found between the attitude variable and the courses taught variables, as shown in Table 3.

Using the frequency of use composite score as the dependent variable and the specialization areas and courses taught as independent variables, several significant mean differences were detected. As indicated in Table 4, agricultural education professors who had specialized in teaching methods had a significantly higher use composite score ($\bar{x}=9.79$) than did professors without that specialization ($\bar{x}=9.45$). Faculty who taught a methods course also had significantly higher use composite scores ($\bar{x}=9.78$) than did professors who did not teach a methods course ($\bar{x}=9.47$), as shown in Table 5.

Three other courses taught variables helped explain the frequency of use variable. Those who taught a guidance course were found to have a higher use composite score ($\bar{x}=10.23$) than did those who did not teach a guidance course ($\bar{x}=9.59$). Significantly higher means were observed for professors who taught program planning ($\bar{x}=9.84$) than for those who did not ($\bar{x}=9.50$). Finally, those who taught a curriculum course had a significantly higher use composite score ($\bar{x}=9.84$) than those who did not teach a curriculum course ($\bar{x}=9.54$).

Test results for single classification of analysis of variance revealed no significant differences existed in either the attitude composite scores of professors or their frequency of use composite scores when grouped by (1) percentage of officially budgeted time for teaching, research, and other, (2) professional rank, (3) years of college teaching, (4) years of high school teaching, and (5) average class size.

As revealed in Table 6, positive significant relationships existed between the attitude composite score and two variables, the frequency of use composite score ($r=.63$; $r^2=.40$) and the societal needs goal source ($r=.16$; $r^2=.03$). The shared variance of the latter was too low to be of practical use. Similarly, a significant, but not practical, relationship existed between the frequency of use score and the percentage of officially budgeted time for research ($r=.16$; $r^2=.03$).

Results of professors' ranking of goal source priorities are shown in Table 7. When setting course goals, "technical skills and competencies needed by students" received the highest rating with 50.4 percent of the respondents giving it a high or very high priority. Subject matter concerns received the second highest priority with 41.7 percent of the respondents indicating that it was a high or very high priority to them. Agricultural education professors gave the human relations goal source the third highest priority with 40.4 percent of the respondents indicating that it was a high or very high priority for them when setting course goals. The learner needs and interests goal source was given a high or very high priority by 38.9 percent of the respondents. Societal needs were of least concern to agricultural education faculty as they set their course goals with only 28.8 percent of the respondents rating it as a high or very high priority.

Table 2. Means, standard deviations, and t-values of the learning theories attitude composite score by areas of agricultural education specialty

	Learning theories attitude composite score							
	Professors with specialty			Professors without specialty				
Areas of specialty	N[a]	Mean	S.D.	N	Mean	S.D.	t-value	Probability
Introduction to agricultural education	26	10.58	1.19	113	10.28	0.94	1.38	.170
Teaching methods	77	10.43	0.93	62	10.22	1.05	1.23	.221
Philosophy	21	10.38	1.20	118	10.33	0.95	0.21	.835
Future Farmers of America	47	10.27	1.03	92	10.38	0.97	-0.62	.536
Supervised Occupational Experience Programs	49	10.17	0.85	90	10.43	1.05	-1.50	.136
Leadership	38	10.30	1.22	101	10.35	0.90	-0.24[b]	.814
Guidance	12	10.65	1.30	127	10.31	0.96	1.13	.261
Microcomputers	16	10.30	0.73	123	10.35	1.02	-0.18	.854
Instructional media	26	10.30	0.97	113	10.35	1.00	-0.23	.817
Program planning	60	10.30	0.98	79	10.37	1.00	-0.41	.679
Supervision and administration	42	10.60	1.13	97	10.23	0.91	1.91[b]	.061
Evaluation	34	10.31	0.90	105	10.35	1.02	-0.21	.837
Curriculum	52	10.43	1.00	87	10.29	0.98	0.87	.386
Other	38	10.19	0.96	101	10.40	1.00	-1.08	.280

[a] Averages were computed on mean composite scores.

[b] A separate t-test was used rather than a pooled t-test as was used for the other variables.

Table 3. Means, standard deviations, and t-values of the learning theories attitude composite score by agricultural education courses taught

Agricultural education courses	Learning theories attitude composite score							
	Professors teaching course			Professors not teaching course				
	N[a]	Mean	S.D.	N	Mean	S.D.	t-value	Probability
Introduction to agricultural education	49	10.37	0.91	90	10.32	1.04	0.26	.793
Teaching methods	74	10.38	0.89	65	10.29	1.10	0.48	.630
Philosophy	24	10.13	0.86	115	10.38	1.01	-1.16	.248
Future Farmers of America	42	10.32	1.14	97	10.35	0.92	-0.14[a]	.885
Supervised Occupational Experience Programs	44	10.24	1.09	95	10.39	0.94	-0.83	.410
Leadership	31	10.35	1.23	108	10.34	0.92	0.07[b]	.942
Guidance	9	10.73	1.06	130	10.31	0.98	1.25	.214
Microcomputers	14	10.44	0.69	125	10.33	1.02	0.39	.700
Instructional media	21	10.37	0.78	118	10.33	1.03	0.17	.866
Program planning	57	10.44	1.07	82	10.27	0.93	1.03	.304
Supervision and administration	36	10.55	1.15	103	10.27	0.92	1.35[b]	.182
Evaluation	36	10.36	0.97	103	10.33	1.00	0.14	.890
Curriculum	44	10.50	1.04	95	10.27	0.96	1.30	.197
Other	55	10.28	0.92	84	10.38	1.04	-0.58	.564

[a] Averages were computed on mean composite scores.

[b] A separate t-test was used rather than a pooled t-test as was used for the other variables.

Table 4. Means, standard deviations, and t-values of the frequency of use composite score by areas of agricultural education specialty

	Frequency of use composite score							
	Professors with specialty			Professors without specialty				
Areas of specialty	N[a]	Mean	S.D.	N	Mean	S.D.	t-value	Probability
Introduction to agricultural education	26	9.82	1.08	112	9.59	0.96	1.08	.283
Teaching methods	77	9.79	0.91	61	9.45	1.04	2.05	.043
Philosophy	21	9.76	1.09	117	9.61	0.96	0.65	.517
Future Farmers of America	47	9.70	1.04	91	9.60	0.95	0.58	.565
Supervised Occupational Experience Programs	49	9.68	0.96	89	9.61	0.99	0.36	.717
Leadership	38	9.75	1.06	100	9.59	0.95	0.81	.419
Guidance	12	10.03	1.02	126	9.60	0.97	1.45	.148
Microcomputers	16	9.91	1.05	122	9.60	0.97	1.17	.243
Instructional media	26	9.85	1.05	112	9.59	0.96	1.22	.224
Program planning	60	9.79	1.01	78	9.52	0.95	1.59	.115
Supervision and administration	42	9.80	1.18	96	9.56	0.88	1.18[b]	.243
Evaluation	34	9.74	0.91	104	9.60	1.00	0.73	.464
Curriculum	52	9.63	1.05	86	9.64	0.94	-0.09	.925
Other	37	9.54	1.04	101	9.67	0.96	-0.68	.498

[a] Averages were computed on mean composite scores.

[b] A separate t-test was used rather than a pooled t-test which was used for all other "specialization" variables.

Table 5. Means, standard deviations, and t-values of frequency of use composite score by agricultural education courses taught

	Frequency of use composite score							
	Professors teaching course			Professors not teaching course				
Agricultural education courses	N[a]	Mean	S.D.	N	Mean	S.D.	t-value	Probability
Introduction to agricultural education	49	9.71	0.97	89	9.60	0.99	0.61	.540
Teaching methods	74	9.78	0.89	64	9.47	1.06	1.82	.071
Philosophy	24	9.60	1.18	114	9.64	0.94	-0.21	.836
Future Farmers of America	42	9.71	1.08	96	9.60	0.93	0.62	.538
Supervised Occupational Experience Programs	44	9.72	1.00	94	9.60	0.97	0.70	.482
Leadership	31	9.77	1.13	107	9.60	0.93	0.89	.377
Guidance	09	10.23	1.05	129	9.59	0.97	1.91	.058
Microcomputers	14	9.76	1.17	124	9.62	0.96	0.49	.627
Instructional media	21	9.86	0.90	117	9.60	0.99	1.11	.268
Program planning	57	9.84	0.98	81	9.50	0.96	2.03	.004
Supervision and administration	36	10.00	1.23	102	9.51	0.84	2.20[b]	.033
Evaluation	36	9.76	1.09	102	9.59	0.94	0.86	.391
Curriculum	44	9.84	1.06	94	9.54	0.93	1.67	.096
Other	54	9.52	0.95	84	9.71	1.00	-1.10	.271

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[a] Averages were computed on mean composite scores.

[b] A separate t-test was used rather than a pooled t-test which was used for all other "courses taught" variables.

Table 6. Pearson product-moment correlations between both the attitude and use composite scores with selected independent variables

Independent variable	Attitude	Use
Learning theories attitude composite score	1.00 .001	.63[a] .001[b]
Frequency of use composite score	.63 .001	1.00 .001
Subject matter goal source	-.13 .146	-.03 .745
Technical competencies/skills goal source	-.11 .206	-.08 .362
Teaching-learning processes/human relations goal source	.05 .535	.08 .383
Societal needs goal source	.16 .073	.12 .182
Learner needs and interests goal source	-.03 .771	-.14 .124
Percentage of time budgeted for teaching	-.07 .442	-.08 .344
Percentage of time budgeted for research	.14 .121	.16 .069
Percentage of time budgeted for administration	-.02 .786	.11 .199
Percentage of time budgeted for other	-.05 .604	.03 .728
Average class size taught	.01 .933	.00 .993
Years of college teaching experience	.10 .232	.04 .630
Years of high school teaching experience	.08 .349	.13 .115

[a] Coefficient.
[b] Probability.

Table 7. Frequencies and percentages given to five goal sources

Ranked item	Goal source priority scale from low (1) to high (5) priority					N
	1	2	3	4	5	
	Frequencies/percentages					
Subject matter	18 13.6	29 22.0	30 22.7	33 25.0	22 16.7	132
Technical competencies/ skills	12 9.2	24 18.3	29 22.1	36 27.5	30 22.9	131
Teaching-learning processes/ human relations skills	15 11.5	30 22.9	33 25.2	18 13.7	35 26.7	131
Societal needs	69 52.3	12 9.1	13 9.8	11 8.3	27 20.5	132
Learner needs and interests	18 13.7	36 27.5	26 19.8	33 25.2	18 13.7	131

CONCLUSIONS AND RESEARCH RECOMMENDATIONS

Although agricultural education professors held a positive attitude toward cognitive skill development and frequently used cognitive skill development techniques in their classrooms, the average attitude score ($\bar{x}$=10.34) and the average use score ($\bar{x}$=9.64) were lower than might have been expected considering agricultural education's historical commitment to problem solving. Agricultural education professors appeared to be using a myriad of cognitive skill development techniques, including those believed to promote "low-order" thinking. In addition, it was not determined whether professors were using cognitive techniques to deliver content information to the students or to develop the students' abilities to think.

A consistency existed between professors' beliefs and their practices with regard to cognitive skill development as indicated by the positive, moderate relationship found between the attitude and use variable. Such a consistency does not always occur in education (Saylor et al., 1981).

Few significant differences were found when professors who had a certain specialization and/or were teaching a certain course were compared with those who did not have that particular specialization or were not teaching that particular course. In some cases, those specializing or teaching in areas where cognitive processes such as decision making might be more prevalent, attitude and use scores were significantly higher. Noticeably absent from the list of significant differences were those professors who possessed a specialty in or who were teaching a course in evaluation, leadership, microcomputers, and philosophy. These areas would readily lend themselves to the use of cognitive skill development techniques. Entire thinking skills courses have been developed around philosophy (Lipman, 1984).

Significant differences in both attitude and use scores between professors teaching primarily at the graduate level and those teaching at the undergraduate level warrant further investigation. It could be that those who taught graduate-level courses believed that higher-order thinking was most appropriate at the graduate level. It is also possible that those teaching at the undergraduate level had more content and skill concerns to address which lowered their attitude and use scores.

Professors' primary concern with technical skills and competencies along with a concern for subject matter, is not necessarily conducive to the growth of process-oriented endeavors such as cognitive skill development. Should the current emphasis in these areas retain its stronghold, it is likely that any new effort to infuse cognitive skill development into the college-level, agricultural education curriculum will be slow in materializing.

Recommendations for further study include:

1. Investigating more thoroughly the attitudes toward and use of cognitive skill development between professors teaching primarily at the graduate level and those primarily teaching at the undergraduate level to determine the reasons for the significant differences found in this study.

2. Further investigating the extent of cognitive skill development use within agricultural education at the college level and include classroom observation, content analysis, and student feedback as part of the research methodology in order to further illuminate the study´s findings.
3. Initiating empirical studies to determine whether certain cognitive skill development techniques and/or programs are more useful and effective than other techniques when used in college-level agricultural education programs.

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PREPARING EFFECTIVE VOCATIONAL AGRICULTURE TEACHERS: A COMPARISON OF LAND-GRANT AND NONLAND-GRANT UNIVERSITIES

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INTRODUCTION/NEED FOR THE STUDY

A variety of suggestions have been offered for reducing the shortage of vocational agriculture teachers. Luft and Bender (1974) encouraged the profession to recruit more potential students. Several teacher educators (Kindschy, 1974; Knight, 1980; Lee, 1978) suggested that recruiting teachers from industry might help solve the teacher shortage. A third procedure which has emerged in some states during the past decade has been to increase the number of colleges and universities which prepare teachers of vocational agriculture.

Research by Craig (1982) has revealed that the number of students recruited into teacher education programs since the mid 1970's has decreased. It appears the profession has not heeded the advice of Luft and Bender.

The idea of recruiting teachers from industry has been critically examined by several teacher educators (Bender, 1978; Dickerson, 1983; Knebel, 1977; and Moore, 1975). After observing industry teachers or conducting empirical research on the teaching ability of these teachers, the aforementioned teacher educators expressed concern about recruiting teachers from industry.

In several states such as Arkansas, Missouri, and Oklahoma the number of institutions which can prepare teachers of vocational agriculture has increased during the past few years. This has caused some concern in the profession. The institutions which are adding teacher education program are typically small, regional institutions which had their beginnings as junior colleges or normal schools. While there has been debate (Sabol, 1979; Weston, 1979) over whether or not these nonland-grant universities should be allowed to prepare teachers of vocational agriculture there is no empirical research which documents the effectiveness of nonland-grant or land-grant institutions in preparing vocational agriculture teachers.

OBJECTIVES OF THE STUDY

The objective of this research was to compare the teaching ability, program activity, and attitudes of vocational agriculture teachers who received their training at land-grant and nonland-grant universities. Specific objectives were:

1. To determine if there were differences in the teaching ability of vocational agriculture teachers according to the type of institution (land-grant or nonland-grant) from which they graduated as perceived by administrators of the schools where the teachers were employed.

2. To determine if there were differences in the degree of activity of the Future Farmers of America (FFA), students' Supervised Occupational Experience Programs (SOEP), and Young/Adult Farmer Programs conducted/supervised by the two groups of teachers (land-grant and nonland-grant universities).

3. To determine if there were differences in the attitudes of the two groups of teachers (land-grant and nonland-grant) toward FFA, SOEP, and Young/Adult Farmer Programs.

METHODS AND PROCEDURES

Population and Sample

The primary population for this study were vocational agriculture teachers who entered teaching in 1981-82 and who received their undergraduate degrees from land-grant and nonland-grant institutions in the ten states which have both types of institutions.

According to Craig (1983) there are ten states (Arkansas, California, Illinois, Kentucky, Louisiana, Missouri, Oklahoma, Tennessee, Texas, and Wisconsin) which have both land-grant and nonland-grant institutions preparing vocational agriculture teachers. The 37 institutions (excluding 1890 land-grant universities) in these states had 333 graduates who entered the teaching profession in 1981-82. The researchers contacted all 37 institutions and asked for a list of the names and current addresses of the 333 graduates who had entered teaching in 1981-82. All the institutions responded. Three hundred people were identified as still teaching vocational agriculture. Of the 300 teachers identified, 99 were graduates of land-grant universities and 201 were graduates of non-land grant institutions.

Using a table of random numbers, a proportionate random sample of 200 teachers was drawn from the population. There were 66 teachers from land-grant institutions and 134 teachers from nonland-grant universities in the sample. The size of the sample drawn was more than adequate according to the criteria established by Hinkle, Oliver, and Hinkle (1983) or Krejcie and Morgan (1970).

There were several reasons for selecting teachers who had graduated in 1981-82. At the time the study was conducted most of the teacher would be in their second year of teaching. They should be past the trauma of the first year; the teacher training program they had experienced should still be reflected in their teaching; and they should not have earned the masters degree which might influence their teaching.

The 1890 land-grant universities were excluded from this study because of the low number of graduates who entered teaching.

The high school principals of the schools where the two hundred vocational agriculture teacher were employed were included in the study to supply information concerning the teaching ability of the teachers (Objective 1).

Instrumentation

Two different instruments were used in collecting the data. The first instrument was used to assess the teaching ability of the teachers. This instrument was developed by Moore (1980) after a thorough review of the literature on teaching effectiveness and extensive field testing. The instrument contains 22 items which factor into three major categories - teaching ability, subject matter knowledge, and program involvement. For each item the respondent is asked to assign a numerical rating of from one to ninety-nine. A score of 50 on an item is considered average while one is very low and 99 is considered very high. In a nationwide study of vocational agriculture teachers, Moore reported a reliability of .96 on the instrument. In a study of teachers in Louisiana, Grady (1984) reported the instrument achieved a reliability of .97. In this study the Cronbach's alpha reliability coefficient was .96.

The second instrument was used to collect information from each vocational agriculture teacher. This instrument was developed by the researchers after a review of the literature, field testing the instrument with a group of vocational agriculture teachers in Indiana, a review of the instrument by teacher educators at LSU, and finally a review of the instrument by a national jury of recognized scholars in agricultural education. This instrument asked for demographic data, information about the activities of the FFA, SOEP, and young/adult farmer programs supervised by the teacher, and a section which assessed the attitude of the teacher toward the FFA, SOEP, and young/adult farmer programs. The activities section of the instrument sought both interval data (such as number of meetings, awards, etc.) and nominal data (yes or no). The 30 attitude statements on the instrument used a one to eleven Likert-type scale rating. This instrument yielded a Cronbach's alpha reliability coefficient of .85.

Data Collection

All data were collected through the mail. After the initial mailing and two follow-up letters to each of the groups, the following response rates were realized:

Vocational Agriculture Teachers (200 were in the sample)
151 total responses (75.5%)
145 were usable (72.5%)

High School Principals (200 were in the sample)
175 total responses (87.5%)
165 were usable (82.5%)

A random sample of ten vocational agriculture teachers was drawn from the non-respondents and contacted by telephone to determine if they were different from the respondents. By comparing their responses with the respondents on selected items on the instrument, it was decided they did not constitute a different population. The response rate of the school principals was considered adequate (Babbie, 1973); therefore, further follow-up was not conducted.

RESULTS

Findings

Teaching Ability

The teaching ability of the vocational agriculture teachers was assessed by the principals in the schools in which the teachers were employed. The principals were told the purpose of the research was to identify strengths and weaknesses of teachers in order to improve teacher education programs. They were not told that teachers prepared at land-grant universities would be compared with those prepared at nonland-grant universities. Eighty-six percent of the principals who responded indicated the teacher involved in the study had been observed by them at least twice during the year. An additional 12 percent of the principals indicated the vocational agriculture teacher had been observed once.

Teachers from both land-grant and nonland-grant institutions were rated above average by the principals. The mean rating on the 19 items which comprise the three sub-scales for the land-grant teachers was 71.93, while the mean rating for the nonland-grant teachers was 72.74 (a score of 99 was highest possible). The difference in mean scores was not statistically significant using an independent sample t-test at the .05 alpha level $t(163) = 0.89$, $p > .05$. The mean scores for all items on the instrument are presented in Table 1.

Eight items on the instrument comprised the teaching ability sub-scale. The mean score for land-grant teachers on items in this sub-scale was 69.33 while the nonland-grant teachers averaged 70.97.

The program involvement sub-scale consisted of five items. The mean score per item for land-grant teachers on this sub-scale was 73.12 while the nonland-grant teachers averaged 74.08.

The third sub-scale, which consisted of six items, was subject matter knowledge. Land-grant teachers had a mean item score of 74.4 while non-land grant teachers averaged 73.98.

Three additional items were on the instrument. Two of the items are used to verify internal consistency of the instrument. One item states "The teacher's overall knowledge and skills in the agricultural subject matter is ___." This item is expected to correlate highly with the subject matter sub-scale score. The second item, "The overall teaching effectiveness of this teacher is ___." The score on this statement is expected to correlate highly with the teaching ability sub-scale score. High correlations on these two items provide an additional measure of internal reliability. The third item, "This person's teacher preparation program was ___." stands alone.

The mean score on the overall subject matter knowledge question was 77.56 for the land-grant teachers and 77.17 for the nonland-grant teachers. The correlation for this score and the knowledge sub-scale score was .46. The mean score on the overall teaching effectiveness item was 72.72 for the land-grant teachers and 73.70 for the nonland-grant teachers. The correlation for this score and the teaching ability sub-scale was .88. The mean rating for the teacher preparation program of land-grant teachers was 74.29 while the mean rating for nonland-grant program was 75.64.

The highest rated item for both types of teachers was "work with FFA" (LG=82.31, NLG=83.73) and the lowest rated item for both groups of teachers was "vocational instruction for adults" (LG=63.2, NLG=61.69). In general, the relative ranking of items for both groups of teachers were similar.

Table 1

Teaching Ability of Land-grant and Nonland-grant Vocational Agriculture Teachers as Perceived by School Principals

Item	Mean Rating	
	Land-grant (N=54)	Nonland-grant (N=111)
Ability to motivate students	65.17	69.86
Ability to relate to students	68.64	72.29
Use of questions while teaching	69.33	69.46
Uses a variety of teaching techniques	68.00	68.00
Is enthusiastic	74.26	77.31
Ability to plan lessons	70.42	68.58
Ability to hold attention of class	68.67	70.06
Control of the classroom	70.13	72.70
Mean Teaching Ability Sub-Scale Score	69.33	70.97
Participates in professional activities	74.55	77.41
Works with the FFA	82.31	83.73
Supervises student projects or work experience	75.90	75.98
Manages the agricultural laboratory	69.64	71.60
Participates in vocational instruction for adults	63.20	61.69
Mean Program Involvement Sub-Scale Score	73.12	74.08
Knowledge and skills in horticulture	68.02	70.63
Knowledge and skills in agricultural mechanics	74.74	70.85
Knowledge and skills in animal science	77.82	79.10
Knowledge and skills in crop production	75.26	74.98
Knowledge and skills in resource conservation	73.89	72.56
Knowledge and skills in farm management	76.67	75.73
Mean Subject Matter Knowledge Sub-Scale Score	74.40	73.98
The teacher's overall knowledge and skills in the agricultural subject matter:	77.56	77.17
The overall teaching effectiveness of the teacher:	72.72	73.70
This person's teacher preparation program was:	74.29	75.64
Overall Mean Rating - 19 items	71.93	72.74*

Note. The response scale ranged from 1 to 99. A score of 1 is very poor, 50 is average, and 99 is excellent.

*$t(163) = .89$, $p > .05$

Program Activity

A multi-dimensional formula was developed by the researchers to assign an "activity score" to the vocational agriculture program being conducted by the teacher. The researchers believe a complete program of vocational agriculture will have an FFA component, a SOEP component, and a young/adult farmer component. Accordingly, the formula utilizes information supplied by the teacher about the types and number of activities associated with each component. A total activity score is calculated along with sub-scale scores for FFA, SOEP, and the young/adult farmer component. A total of 42 items (23 on FFA, 13 on SOEP, and 6 on young/adult farmer) are used in calculating the activity score. Each of the 42 items is assigned a weight which should result in a score of 100 on the FFA sub-scale for an active program, a 100 on the SOEP sub-scale for an active program, and a score of 50 on the adult/young farmer component for an active program. Therefore, a total activity score of 250 would indicate an active vocational agriculture program. There is no ceiling score. It is possible to exceed the "norm" score suggested by the researchers. The agricultural education faculty at LSU and a national panel of ten recognized scholars in the field were used to arrive at the items and factors used on the program activity instrument. The items used in arriving at the activity score and the weighting factors are found in Table 2 along with the activity scores for the two groups of teachers.

The mean program activity score for vocational agriculture teachers prepared at land-grant institutions was 179.95 while the nonland-grant prepared teachers had a mean program activity score of 168.83. This difference in scores was not statistically significant $t(143) = 0.69$, $p > .05$.

The FFA activity sub-scale score for land-grant teachers was 79.39 while the nonland-grant teachers had an FFA activity sub-scale score of 75.47. The SOEP sub-scale score was 80.39 for land-grant teachers and 81.84 for non-land grant teachers. The young/adult farmer sub-scale score was 20.17 for land-grant teachers and 11.52 for nonland-grant teachers.

Attitudes

Thirty statements designed to measure the attitudes of vocational agriculture teachers toward the FFA, SOEP, and Young and/or adult farmer components of the vocational agriculture program were on the instrument. Three sub-scale scores plus a total summated score were calculated. The overall attitude score for land-grant teachers was 260.96 (highest possible score was 330). The nonland-grant teachers had a total attitude score of 251.50. The difference in attitude scores was statistically significant $t(143) = 2.06$, $p < .05$. The attitude statements and mean score for each of the items is found in Table 3.

The land-grant teachers had an FFA attitude score of 89.03 while the nonland-grant teachers had a score of 86.39 (110 was the highest possible). The summated attitude score of the land-grant teachers toward the SOEP was 96.28 while the nonland-grant teachers had a score of 93.83 (110 highest possible). The summated attitude score toward adult/young farmer programs was 75.65 for the land-grant teachers and 71.28 for nonland-grant teachers (110 highest possible).

Table 2

Program Quality Scores for Vocational Agriculture Teachers Prepared at Land-Grant and Nonland-grant Institutions

Variable	Weight	Land-grant Teachers (N=43)		Nonland-grant Teachers (N=102)	
		Mean or Percent	Points Awarded	Mean or Percent	Points Awarded
FFA COMPONENT					
Percent of students who belong to the FFA	(% x .1)	92.19%	9.22	84.69%	8.47
Number of FFA meetings last year	(N x .5)	9.95	4.98	10.54	5.27
Chapter uses official opening/closing ceremonies	(yes= 3)	95.35%	2.86	89.22%	2.68
Officers recite parts from memory	(yes= 3)	81.40%	2.44	80.39%	2.42
Chapter has a written program of activities	(yes= 3)	93.02%	2.79	87.25%	2.62
Are there guest speakers/formal programs at meetings	(yes= 3)	39.53%	1.19	39.21%	1.18
How many speakers did the chapter have last year	(N x .5)	6.14	3.07	4.95	2.48
Are FFA calendars used to promote the program	(yes= 3)	23.26%	.70	23.53%	.71
The chapter has an annual parent-member banquet	(yes= 4)	95.35%	3.81	90.20%	3.61
The official FFA secretaries book is used	(yes= 3)	83.72%	2.51	72.55%	2.17
The official FFA treasurers book is used	(yes= 3)	72.10%	2.16	68.63%	2.05
Were proficiency awards submitted beyond the chapter	(yes= 3)	51.16%	1.53	57.84%	1.74
How many prof. award applications were submitted	(N x 1)	5.77	5.77	5.75	5.75
How many applications placed third or higher	(N x 1)	4.90	4.90	3.05	3.05
Do committees carry out the program of activities	(yes= 3)	93.35%	2.80	91.18%	2.74
Number of judging teams qualified for state	(N x 1)	3.10	3.10	3.20	3.20
Number of applications for the state degree	(N x 1)	4.15	4.15	3.70	3.70
Number who received the state degree	(N x 1)	3.58	3.58	3.43	3.43
Percent of students participating in local fairs	(% x .1)	39.50	3.95	47.70%	4.77
Percent of students participating in state fairs	(% x .1)	16.71%	1.67	19.89%	1.99
Number of chapter level proficiency awards awarded	(N x .5)	8.84	4.42	8.45	4.23
Chapter participated in BOAC	(yes= 5)	46.51%	2.33	44.12%	2.21
Chapter participated in Food for America program	(yes= 5)	34.88%	1.74	24.51%	1.23
Chapter planned activities for National FFA week	(yes= 5)	74.42%	3.72	75.49%	3.77
FFA Component Sub-scale Score			79.39		75.47
SOEP COMPONENT					
Percent of students with one SOEP "project"	(% x .25)	58.17%	14.54	57.23%	14.31
Percent of students with two or more SOEP "projects"	(% x .35)	21.09%	7.38	20.22%	7.08
Percent of students visited once per year	(% x .15)	33.21%	4.98	33.19%	4.98
Percent of students visited twice per year	(% x .3)	30.09%	9.03	25.01%	7.50
Percent of students visited thrice or more per year	(% x .5)	13.03%	6.52	20.02%	10.01
Are students required to keep records on the SOEP	(yes= 4)	93.02%	3.72	88.24%	3.53
Students have class time to update SOEP record books	(yes= 3)	86.05%	2.58	83.33%	2.50
SOEP record books are used in determining grades	(yes= 3)	81.40%	2.44	75.49%	2.26
Percent of class grade SOEP record book determines	(% x .6)	17.50%	10.50	17.42%	10.45
Number of weeks spent in class on SOEP in VA I	(N x 2)	3.44	6.88	3.51	7.02
Number of weeks spent in class on SOEP in VA II	(N x 2)	2.32	4.64	2.26	4.52
Number of weeks spent in class on SOEP in VA III	(N x 2)	1.73	3.46	2.02	4.04
Number of weeks spent in class on SOEP in VA IV	(N x 2)	1.86	3.72	1.82	3.64
SOEP Component Sub-scale Score			80.39		81.84
YOUNG/ADULT FARMER COMPONENT[a]					
Do you conduct a young and/or adult farmer program	(yes= 2)	41.86%	.84	17.65%	.35
The average enrollment in the young/adult program	(N x .5)	19.39	4.06	31.67	2.79
Number of class meetings per year	(N x 1.2)	8.90	4.47	11.05	2.34
Average attendance per meeting	(N x 1)	13.53	5.66	18.61	3.28
Total number of visits made to enrollees	(N x .4)	19.23	3.22	29.80	2.10
The group is affiliated with the YFA or FFA alumni	(yes= 7.5)	25.58%	1.92	8.82%	.66
Young/Adult Farmer Component Sub-scale Score			20.17		11.52
TOTAL PROGRAM ACTIVITY SCORE			179.95		168.83*

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[a] Less than half of the teachers conducted young/adult farmer programs. The values shown are for those teachers who are conducting programs. In calculating activity points for items two through five in this section, the scores were multiplied by the percentage of teachers who conducted programs (Item 1). While the means and percentages first may appear robust, they are for less than half the teachers.

*t(143) = 0.69, p>.05

Table 3

Attitudes of Vocational Agriculture Teachers Prepared at Land-grant and Nonland-grant Institutions Toward Selected Program Components

Attitude Statement	Mean Rating Land-grant (N=43)	 Nonland-grant (N=102)
FFA COMPONENT		
#There is too much emphasis on the FFA	5.60	5.44
#Classroom instruction suffers because of over emphasis on FFA contests and competition	6.86	6.43
FFA is a motivational tool for students	9.88	9.92
FFA activities are challenging for students	9.95	9.93
FFA is an integral part of vocational agriculture	10.26	10.05
#FFA should involve only students who want to participate	5.53	4.62
FFA develops leadership	10.28	10.31
#FFA is time consuming and should not be included in vocational agriculture	10.44	10.16
FFA is essential to make vocational agriculture attuned to the 1980s	10.07	9.70
FFA develops citizenship and patriotism	10.16	9.83
FFA attitude sub-score	89.03	86.39
SOEP COMPONENT		
#SOE programs are no longer a viable part of vocational agriculture	10.26	9.48
#Computers can now simulate SOE programs thereby eliminating their use	10.07	9.32
#The elimination of SOEPs would make vocational agriculture more attuned to the 1980s	10.29	10.23
All students enrolled in vocational agriculture should have SOE programs	8.72	9.30
#Too much emphasis is placed on SOEPs	8.74	8.46
SOEPs are integral to the classroom instruction	9.33	8.89
SOEPs help the vocational agriculture teacher to be knowledgeable of the community	9.53	9.27
Vocational agriculture students can use the SOEP experience in the classroom	9.86	9.51
[illegible] programs are good public relations tools	9.74	9.51
#SOE programs are time consuming and should not be a part of the program	9.74	9.86
SOEP attitude sub-score	96.28	93.83
YOUNG/ADULT FARMER COMPONENT		
#There is too much emphasis on adult/young farmer programs	7.64	7.93
#Adult and/or young farmer education is not important in vocational agriculture	9.17	8.21
Adult/young farmer programs promote good school-community relations	9.48	8.92
There is not enough emphasis on adult/young farmer programs	5.78	6.37
#Adult/young farmer programs should be primarily conducted by extension personnel	4.62	5.30
Adult/young farmer programs should be a part of the total program of voc. agriculture	8.43	6.95
Vocational agriculture teachers should conduct young/adult farmer programs	7.71	6.58
Adult and/or young farmer programs are essential for vocational agriculture to meet the challenge of the 80s	8.71	7.62
#Adult and/or young farmer programs are time consuming and should be provided by special adult teachers only	7.31	6.73
#Adult and/or young farmer programs should be conducted only at the post-secondary level	6.80	6.67
Young/adult farmer attitude sub-score	75.65	71.28
OVERALL ATTITUDE SCORE	260.96	251.50[a]

NOTE. The rating scale was 1 = strongly disagree, 6 = undecided, 11 = strongly agree

#Items with this symbol are negative and the scoring was reversed. The higher the score, the more positive the attitude.

[a] $t(143) = 2.06$, $p < .05$

Conclusions

There was no difference in the teaching ability of vocational agriculture teachers prepared at land-grant and nonland-grant universities. Both groups of teachers were perceived by their principals as being above average in subject matter knowledge and teaching skills.

Overall, there was no difference between land-grant prepared teachers and nonland-grant prepared teachers in activeness of the FFA or SOE program. While no statistical analysis was conducted, it appears that land-grant teachers are more active in adult and/or young farmer programs than nonland-grant teachers. Less than 20 percent of the nonland-grant teachers conducted adult programs while more than 40 percent of the land-grant teachers conducted adult programs.

Teachers prepared at land-grant universities had a more favorable attitude than teachers prepared at nonland-grant universities toward the components of a complete vocational agriculture program. Both groups of teachers had somewhat similar attitudes concerning the FFA and SOEP but more difference appears to be in attitude toward the young farmer/adult programs. While the land-grant teachers did not have as strong an attitude toward young and/or adult farmers as they did about the FFA and SOEP, the nonland-grant teachers had a particularly soft attitude toward the adult and/or young farmer program.

Recommendations

One plausible solution to the teacher shortage may be to increase the number of universities which prepare vocational agriculture teachers. Since there was no difference in the teaching ability or subject matter knowledge of the two groups of teachers, it appears nonland-grant universities which have agriculture and education but no vocational agriculture teacher training could prepare teachers.

Both groups of teachers were not as active or as favorable toward adult and/or young farmer education as they were toward other aspects of the program. This was particularly true of nonland-grant prepared teachers. If young and/or adult farmer programs are important in vocational agriculture, then both types of universities may need to strengthen this area, especially nonland-grant universities.

An alternate recommendation to the previous recommendation would be to issue a call to the profession to carefully examine the place of adult/young farmer education in the vocational agriculture program. Is it something the profession should push or should it be abandoned?

Since merit pay, teacher career ladders, and other forms of teacher accountability and evaluation appear to be on the horizon, the profession may want to take a proactive stance and prepare for the future. The concept of an "Activity Instrument" to assess the FFA, SOEP, and adult/young farmer program as discussed in this paper needs to be further examined. Existing methods of evaluating teachers based solely upon classroom performance does not accurately assess the multiple roles of the vocational agriculture teacher. Instruments which are valid, reliable, not subject to bias, and which can easily be administered are needed to evaluate vocational agriculture teachers. Norm scores need to be established. The researchers will be the first to admit the activity instrument used in this research is not perfect but could provide a starting place for further refinement and development. The profession needs to develop its own model for evaluation before someone else does it for us.

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TEACHER PREPARATION IN AGRICULTURAL EDUCATION: A DISCUSSION OF RESEARCH REPORTS

Concurrent Session I, 1:00 - 2:30 p.m.
December 6, 1985

NATIONAL AGRICULTURAL EDUCATION RESEARCH MEETING
American Vocational Association
Atlanta, Georgia

by

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I appreciate the opportunity to serve as a discussant at this meeting. To be a discussant is always a stimulating and revitalizing growth experience. The discussant is an important component of the NAERM because it facilitates two-way communication, gives feedback to the researcher from a different frame of reference, and stimulates others to propose and conduct quality research in the future.

The three papers presented today all have implications for teacher preparation in agricultural education--the theme of this session. The papers were not written for the theme; the theme emerged from the papers selected for presentation. Credits go to the reviewers of the paper proposals and to Bob Stewart for selecting these fine papers and placing them in context.

I will discuss the papers in the order in which they were presented. The first paper entitled "Where are you when we need you, Rufus W. Stimson?" by Gary Moore was probably the most enjoyable experience I have ever had in reading a research paper. Reviewing the paper was a pleasure because (1) the research involved my own institution, namely, the University of Connecticut, and (2) the paper put into historical context the evolvement of an educational reform movement designed, as Gary stated, to do the exact opposite of what is being proposed by many proponents of educational reform today.

Gary's paper is important for several reasons. First, it is historical research. In recent years there has been a dearth of historical studies in agricultural education. Less than one percent of the research reported in agricultural education from 1974-1982 is historical research (Mannebach, 1984). As a historical study, the paper takes us back to our roots, traces the development of major components of agricultural education as we know it today, and, as presented in the objective of the paper, reacquaints members of the agricultural education profession with the life and teachings of a person who has had a profound impact on agricultural education.

Second, the paper relates past developments to current concerns. It helps answer the question "Why has agricultural education evolved as it has over the years?" Gary takes the study the next step and speculates what Stimson would have to say to the profession today.

Third, the research, as I see it, is a call for action. The conditions and times call for leadership from the profession. We need eloquent spokespersons to help chart our direction during times of constant change. We have the model and the example to follow from the past, Rufus W. Stimson. We now need to carry on in the context of the conditions and pressures of our time, knowing that we have deep roots and are on solid philosophical ground.

Now back to the critique. From my point of view, the researcher is to be commended on the following points:

1. Conducting historical research and submitting it for dissemination at this meeting.
2. Putting into historical context issues confronting the agricultural and vocational education community today.
3. Providing an example of how past writings in agricultural education can be "brought to life" and made relevant to the issues of today.
4. Conducting an extensive review of literature.
5. Selecting pertinent material central to the purpose of the paper.
6. Writing in an interesting and logical manner.
7. Supplementing the manuscript with pictures to emphasize key points.
8. Identifying the source of at least eight concepts or practices which, to a great extent, are still an integral part of professional vocational education philosophy today, namely; the project method, itinerent teacher education, traveling seminars, job analysis, sex equity, advisory councils, adult education, and a balanced education for all.

Following are some questions and comments that the researcher may want to consider:

1. To what extent and in what manner have the times and conditions of today altered the validity of the principles set forth by Stimson in the early 1900's? For example, a school farm and laboratory plants, animals, and mechanics are now an integral part of the instructional program at the Smith Agricultural School. According to a recent graduate of the School, the project method, or the supervised occupational experience program as we now call it, is currently not emphasized strongly.

For agricultural education leaders, perhaps the critical question is, "To what extent should we adhere to the principles and practices of the past as opposed to adjusting and adapting our principles, programs and practices to the ever changing needs and pressures of our society?" Vigilant analysis of our philosophy in light of the changing social order seems warranted.

2. We have a rich heritage. How can we take the best of our philosophy from the past and use it as a basis for program development and improvement in the future? What procedures do we have as a profession to discard, adapt, adopt or create philosophy, principles, programs and practices in agricultural education?

3. I'm sure the paper has enlightened many of us in the profession of our heritage. How can the profession make sure that the general public also gets the message?

4. Make sure that members of "The National Study Committee on Agricultural Education in Secondary Schools" get a copy of the paper. I think the paper has relevance for them.

In summary, this paper is an excellent example of how historical research can be used to place current issues into perspective. I hope the study is the beginning of more involvement in historical research study in agricultural education in the future.

The second paper, entitled "Attitudes Toward and Utilization of Cognitive Skill Development Among Agricultural Education Faculty in the United States" by Rose Jones and David Williams, also addressed the important issue of educational reform. The researchers wrote their paper in the context of determining the extent to which agricultural education faculty have a positive attitude toward and use cognitive skill development processes within university classes. The study is important because evidence regarding the degree to which basics are integrated into vocational education classes by teacher educators is presented.

The researchers are to be commended for:

1. Conducting a study national in scope.
2. Providing researchers in agricultural education with benchmark data regarding attitudes toward and use of cognitive skill development.
3. Identifying and studying many variables potentially related to the issue.
4. Presenting a large amount of data in useable form.

Following are some comments and questions the researchers may want to consider:

1. The introduction and theoretical framework for the problem could have been stated more effectively. Too many assumptions were made regarding the readers knowledge of the issue studied.

2. It would have been helpful if the terms "cocnitive skill development" had been defined. My perception is that the authors equated cognitive skill development to problem solving. I question whether or not the respondents made the connection between the two. An explicit definition would have helped set the frame of reference for the study.

3. No mention was made about the response rate obtained. Information about non-respondents was not presented.

4. The statement is made, "Validity was established through the literature, a panel..., and an educational psychologist also from ISU." Further explanation seems warranted.

5. Instrument development procedures were not fully presented.

6. In the conclusions section, the researchers state that the average attitude score and the average use score were lower than might have been expected considering agricultural education's historical commitment to problem solving. Again we have a problem of definition. In the minds of many vocational teacher educators, cognitive skill development may have been assumed to be the unfinished business of someone else, with a more negative attitude the result. Again we come to the researcher's assumption of the connection between cognitive skill development and problem solving; a connection which many of the respondents may not have perceived.

7. A related area of needed research in agricultural education are studies which identify and document the extent to which cognitive skill development and academics are part of vocational agriculture classes. I don't think the general public knows how much academic work takes place in vocational classes.

8. The recommendation made in the study that naturalistic inquiry methodology be used to further illuminate the findings of the study is excellent. Additional data should be collected using naturalistic inquiry and critical evaluation procedures.

In summary, the study alerts teacher educators of the need to emphasize the cognitive skill development aspects of subject matter taught and to help present and prospective vocational agriculture teachers to emphasize the academic and thinking aspects of their curriculum.

The last paper entitled "Preparing Effective Vocational Agriculture Teachers: A Comparison of Land-Grant and Nonland-Grant Universities" by Cyril Asiabaka and Gary Moore also focused on an important topic of concern. The results of the research are important to the profession and provide insight into another manner in which teachers of vocational agriculture could be prepared.

The researchers are to be commended on the following points:

1. The paper was concise and well written. The problem was stated specifically.
2. The population and sample were selected within the framework of the stated rationale.
3. Valid and reliable instruments were used to collect the data. The new instrument developed was pilot tested and validated.
4. The researchers obtained an acceptable response rate. A follow-up of non-respondents was conducted.
5. The data were presented clearly and discussed thoroughly.
6. The conclusions and recommendations were presented clearly and discussed adequately.

Following are some comments and questions the rsearchers may want to consider:

1. In certain places throughout the paper, "greater than" or "lesser than" signs were omitted when discussing probabilities. Ommission made reading the paper difficult.

2. Standard deviations and the range of scores were not presented. Such data may have been useful to the reader in interpreting the results.

3. A large amount of data were collected from vocational agriculture teachers. Errors may be present in the data because of fatigue factors. Errors may be present in the data in selected cases because teachers may have reported their opinion about the facts rather than the facts.

4. While I agree that a comprehensive instrument has been used to collect data in this study, differences important to the outcomes of the vocational agriculture programs may be present that were not detected by the instruments used.

In summary, the study was comprehensive, well written, and provides evidence which should set the profession at ease regarding nonland-grant institutional involvement in the preparation of vocational agriculture teachers.

In conclusion, progress in agricultural education depends largely on the quality of the research and development base that supports it. Each of the reports presented today contributes to that base. I commend the researchers for their inquiry efforts and I thank you for the opportunity to serve as a discussant for the National Agricultural Education Research Meeting.

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READJUSTMENT AND LIFE SATISFACTION OF INTERNATIONAL STUDENTS IN AGRICULTURE RETURNING HOME TO A DEVELOPING COUNTRY

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INTRODUCTION

An increasing number of foreign students are studying in the United States. According to reports from The Institute of International Education (Boxan, 1983), there were 326,300 foreign students studying in the United States in 1981-1982; 2.8 percent of these were studying agriculture. In 1983, there was a 3.3 percent increase in the number of international students studying in the United States, bringing the total to 336,985 students. During the latter part of the 1970's, there was an annual growth rate of more than 10 percent in the number of foreign students studying in the United States. Twice during the 1970's, growth was over 16 percent annually (National Association of State Universities and Land Grant Colleges, 1983). Information from the National Association for Foreign Student Affairs (1984) indicated that 3.2 percent of the foreign students (approximately 10,400) were studying in agriculturally related fields. Hood and Shieffer (1983) pointed out that 75 percent of the foreign students studying agriculture were from developing countries.

International students are often away from their home countries for many years living in quite different environments. At the same time their home environments may be changing. Complicating these changes further, the students' home organization and/or job expectations and/or job requirements may be undergoing changes. Thus, there are readjustments encountered by many foreign students from developing countries who return home after studying in the United States. Goetzl and Stritter (1980) said that a university assumes the responsibility of making all its facilities and services available to the international students it enrolls.

Because of the long range implications, such as continued satisfaction with the institution, the Nation's academic reputation, and the realization that many of these international students return to governmental leadership roles that may affect their countries' relations with the United States, the institutions which recruit and educate foreign students also have a responsibility to help integrate these students back into their home environments. However, little information is available that examines readjustments encountered by international students in agriculture returning "home." Jenkins (1980, 1983) indicated that follow-up research on foreign students was an area of need. If such information were available, it might be used to prepare returning students for less stressful reentry and readjustment.

PURPOSE AND OBJECTIVES

This study was conducted to identify and compare anticipated life satisfaction and readjustment as perceived by bachelor and graduate degree level international students returning to developing countries after studying agriculture in the United States with actual life satisfaction and readjustment as perceived by students with similar backgrounds who had already returned home to a developing country. The specific objectives established to accomplish the purpose of the study were to:

1. Determine perceived future life satisfaction of soon-to-be-returning foreign students from developing countries.
2. Determine perceived current life satisfaction of foreign students from developing countries who had recently returned home.
3. Determine perceived readjustments soon-to-be-returning foreign students from developing countries expected to encounter.
4. Determine perceived readjustments encountered by foreign students from developing countries who had recently returned home.
5. Determine whether or not differences in both perceived life satisfaction and readjustment existed between the groups.
6. Determine relationships between perceived life satisfaction, readjustment, and gender, region of origin, academic agricultural background, official and instructional language background, home job situation, age, previous international experience, length of stay in the United States, self-perceived command of the English Language, size of school attended in the United States, participation in reentry program, primary sponsorship, marital status, level of degree earned, and self-perceived quality of education.

PROCEDURES

A theoretical base was established from a review of literature and to accomplish objectives four and five of this study, the following null hypotheses were formulated and evaluated statistically:

1. There are no differences in perceived life satisfaction and readjustment between the pre-departure and post-departure groups.
2. There are no relationships between perceived life satisfaction, readjustment, and gender, region of origin, academic agricultural background, official and instructional language background, home job situation, age, previous international experience, length of stay in the United States, self-perceived command of the English Language, size of school attended in the United States, participation in reentry program, primary sponsorship, marital status, level of degree earned, and self-perceived quality of education.

The population for the study was identified by consulting with the primary international contact at member institutions of the National Association of State Universities and Land-Grant Colleges (NASULGC) that had agricultural programs. Forty-one of the eighty-eight universities contacted provided a list of international students in agriculture. These lists were combined to make a master list of 1,049 international agricultural students consisting of 603 pre-departure students (within a year of returning home) and 446 post-departure students (had returned home less than one year).

To collect the data, two survey instruments were developed, pilot tested, reviewed, and sent to the pre-departure and post-departure international students. The questionnaires differed only as to tense. To locate and eliminate ambiguities and to examine and establish validity, the questionnaire was pilot tested on a sample of students similar to the ones who eventually would be contacted.

Part I of the instrument was designed to obtain background information on age, sex, marital status, number of children, agricultural major, highest academic degree, country of origin, language background, self-perceived competence in the English language, total time spent in the United States, previous international exposure, home job status, size of school attended, and participation in a reentry program. They were asked also to rate the quality of education received in the United States.

Part II of the questionnaire was designed to assess the perceived future or current life satisfaction of the returning international student and consisted of 12 items. To measure life satisfaction, respondents were asked to report their perceived satisfaction in the areas of job, health, housing, marriage, education, friendship, family life, neighborhood, social status, monetary savings, standard of living, and religious/spiritual life. The respondents were asked to circle a number along a continuum that was closest to their level of satisfaction or dissatisfaction.

Part III of the questionnaire was designed to assess the perceived future and current readjustments encountered by the returning international students. The respondents again were asked to circle a number that was closest to their level of readjustment along a continuum on questions dealing with social and cultural readjustments, professional and educational readjustments, and national and political readjustments

The nominal group technique (NGT) (Hoyle, n.d.; Delbecq, Van de Ven, & Gustafson, 1975) was used to compile the questions utilized in Part III of the instrument. The technique was used with two groups. One group was of international students of both genders from developing countries in Africa, Asia, Latin America, and the Near East who had come to the United States for graduate study after they had returned home for a period of time subsequent to studying in the United States. The other group consisted of five professionals, all of whom had served on development projects and had observed international students returning to developing countries after studying in the United States. The items identified by the two groups were consolidated to make up the questions asked on Part III of the questionnaire.

In conclusion, the questionnaire consisted of questions from five areas pertaining to background information (17 items), life satisfaction (12 items), social and cultural readjustment (14 items), professional and educational readjustment (20 items), and national and political readjustment (8 items). A "cumulative" scale was created from a combination of social and cultural, professional and educational, and national and political readjustments; this scale was deemed simply, "cumulative readjustment."

Data for the study were collected by mail. Questionnaire packets were bulk mailed to pre-departure foreign students and airmailed to post-departure foreign students. A follow-up postcard was mailed to pre-departure non-respondent students encouraging them to return the questionnaire. For those who still had not responded a duplicate coded instrument, additional postage-paid, self-addressed envelope, and a personalized cover letter were sent.

Due to financial restraints, no follow-up was attempted for the post-departure students.

There were 601 questionnaires sent to pre-departure students, 35 of which did not reach the recipient. Of the 369 instruments returned 73 were unuseable, a 65 percent return rate.

Post-departure students were sent 448 questionnaires, 5 of which were returned as undeliverable. There were 116 instruments returned with 3 being unuseable, a return rate of 26 percent.

RESULTS

Profile of Respondents

The following profile depicts the respondents submitting useable instruments, a total of 409 subjects. The average age in years of respondents was 31.1 for pre-departure students and 32.2 for post-departure students. Of the respondents, 89 percent (262) of the pre-departure students were male and 11.2 percent (33) were female, while 90.3 percent (102) of the post-departure students were male and 9.7 percent (11) were female; 62.6 percent (184) of the pre-departure students were married as contrasted to 66.7 percent (74) of the post-departure students being married.

The number of children in a family was not reported by 229 of the students. Of those reporting, 5.3 percent (7) of the pre-departure students reported having no children and 4.1 percent (2) of the post-departure students reported having no children. Of the 42 percent (171) who reported that they had children, the average number of children was 2.33. The academic degrees received by pre-departure students varied from 23.6 percent (70) receiving a bachelor's, 44.6 percent (132) receiving a master's, and 31.8 percent (94) receiving a doctorate. Of the post-departure students, 25.7 percent (29) received a bachelor's, 53.1 (60) percent received a master's, and 21.2 percent (24) received a doctorate.

The average score of the respondents' self-appraised ability in English was 4.05 by pre-departure students and 4.06 by post-departure students. The scale ranged from "5" being "highly competent" to "1" being "not competent." While 82 percent (334) of the respondents perceived that they were either "competent" or "highly competent," 18 percent (67) perceived that they were only "somewhat competent" and the remaining 2 percent (6) perceived that they were either "barely competent" or "not competent."

Of those reporting length of sojourn in the U.S., 22 percent (85) of the respondents stayed in the U.S. two years or less, 30 percent (115) stayed in the U.S. more than two years but not more than three years, 18 percent (70) stayed in the U.S. more than three years but not more than four years, 13 percent (48) stayed in the U.S. more than four years but not more than five years, the remaining 14 percent (54) stayed in the U.S. more than five years. The pre-departure student's average length of stay was perceived to be 44.1 months and the post-departure student's length of stay was 35.7 months.

The average score of the respondent's appraisal of the quality of education received in the U.S. was 4.3 with "5" being "very good" and "1" being "very poor." Ninety-one percent of the respondents rated the quality of education "good" or "very good" with 8 percent (31) rating the quality of education "average," and the remaining 1 percent (3) rating it "poor." The post-departure student's average score was significantly higher than the pre-departure student's average score ($t=-3.90$, $p=0.00$).

Most of the respondents, 78 percent (319), had a job assured them on their return home; 80 percent (327) expected to be employed immediately upon their return home and 90 percent (367) expected to be employed in their field of training. Eighteen percent (73) indicated that they either had participated or would participate in a reentry program.

Not all respondents reported their primary sponsor, but those who did indicated that 32 percent (116) were supported by their home government, 30 percent (109) were supported by USAID, 26 percent (92) were family or self supported, and 11 percent (39) were supported by various other external agencies. It must be noted than some of the home government's support was funded by USAID or other external sources.

The official language background varied:

	Pre-departure		Post-departure	
English	29.1%	(86)	31.9%	(36)
Spanish	22.3%	(66)	40.7%	(46)
Arabic	7.8%	(23)	4.4%	(5)
French	5.7%	(17)	3.5%	(10)
Portuguese	3.5%	(10)	5.3%	(6)
Others	31.6%	(94)	14.2%	(16)

The educational language background varied:

	Pre-departure		Post-departure	
English	40.9%	(121)	34.5%	(39)
Spanish	21.3%	(63)	40.7%	(46)
Arabic	6.4%	(19)	3.5%	(4)
French	5.1%	(15)	4.4%	(5)
Portuguese	3.4%	(10)	5.3%	(6)
Others	22.9%	(68)	11.6%	(13)

Summary of Findings

Presented below are the findings pertaining to the related objectives and hypotheses:

Objective One

Objective one sought to determine perceived future life satisfaction of soon-to-be-returning foreign students from developing countries. The average response of the pre-departure student to the life satisfaction scale was a positive 7.01 on a 10 point scale.

Objective Two

Objective two sought to determine perceived current life satisfaction of foreign students from developing countries who had recently returned home. The average response of the post-departure student to the life satisfaction scale was 6.62 on a 10 point scale.

Objective Three

Objective three sought to determine perceived readjustments soon-to-be-returning foreign students from developing countries expected to encounter. The average response of pre-departure students to social and cultural readjustment was 4.15, to professional and educational readjustments was 4.58, to national and political readjustment was 5.12, and to cumulative readjustment was 4.62 (0=no readjustment, 9=major readjustment).

Objective Four

Objective four sought to determine perceived readjustments encountered by foreign students from developing countries who had recently returned home. The average response of post-departure students to social and cultural readjustment was 4.38, to professional and educational readjustments was 4.68, to national and political readjustment was 5.31, and to cumulative readjustment was 4.82 (0=no readjustment, 9=major readjustment).

Objective Five and Hypothesis One

Objective five sought to determine whether or not differences in both perceived life satisfaction and readjustment existed between the pre-departure and post-departure groups. A null hypothesis of no difference was tested. A one-way analysis of variance (ANOVA) was conducted to determine if there were differences between the pre-departure and post-departure students and their perceived life satisfaction and readjustment. The ANOVA revealed that there was a significant difference between the groups in perceived life satisfaction (F=7.72, p=.0057). With an average life satisfaction score of 7.01, pre-departure students perceived that their life satisfaction would be significantly greater than was perceived by the post-departure student with an average life satisfaction score of 6.62. There was not a significant difference between the pre-departure and post-departure groups and social and cultural readjustment, professional and educational readjustment, national and political readjustment, and cumulative readjustment.

Objective Six and Hypothesis Two

Objective six sought to determine relationships between perceived life satisfaction, readjustment, and gender, country of origin, academic agricultural background, official and instructional language background, home job situation, age, previous international experience, length of stay in the United States, self-perceived command of the English Language, size of school attended in the United States, participation in reentry program, primary sponsorship, marital status, level of degree received, field of study, and self-perceived quality of education. The null hypothesis stated that there were no relationships between perceived life satisfaction, readjustment, and the variables listed above. To test the hypothesis, one-way analysis of variance (ANOVA) was used to determine if a relationship existed. If a significant relationship was found, Scheffe's Multiple Range Test was used at the .10 level to determine where the differences occurred.

Gender

Gender was not related to any of the variables of life satisfaction, social and cultural readjustment, professional and educational readjustment, national and political readjustment, or cumulative readjustment.

Region of Origin

Life satisfaction was related to region of origin (F=3.40, p=.0002). Respondents from Central America perceived a significantly greater life satisfaction than those from South Asia. Social and cultural readjustment was also related to region of origin (F=2.37, p=.0076). However, there were no significant differences among regions. Professional and educational readjustment was related to region of origin (F=1.93, p=.0342), but there were no significant differences among regions. National and political readjustment was not related to region of origin, but cumulative readjustment was related (F=1.90, p=.0382). However, there were no differences among regions.

Academic Agricultural Background

None of the variables, life satisfaction, social and cultural readjustment, professional and educational readjustment, national and political readjustment, or cumulative readjustment were related to students' major fields of study.

Official Language Background

Life satisfaction was related to official language background (F=4.13, p=.0029). Those respondents whose official language background was Spanish had a significantly greater life satisfaction score than those whose official language background was either French or English.

Social and cultural readjustment was also related to official language background (F=3.38, p=.0100). Those whose official language background was Spanish had a significantly lower social and cultural readjustment score than those whose official language was either French or English.

Professional and educational readjustment was related to official language background (F=3.18, p=.0141). Respondents whose official language background was Spanish had a significantly lower professional and educational readjustment score than those whose official language background was French

National and political readjustment was related to official language background (F=3.14, p=.0.0150). Respondents whose official language background was Portuguese had a significantly lower national and political readjustment score than those whose official language background was either Spanish or French.

Finally, cumulative readjustment was related to official language background (F=3.55, p=.0076). Those whose official language background was French had a significantly higher readjustment score than those whose official language background was either Portuguese or Spanish.

Instructional Language Background

Life satisfaction was related to instructional language background (F=4.52, p=.0015). Respondents whose instructional language background was Spanish had a significantly higher life satisfaction score than those whose instructional language background was either French or English.

Social and cultural readjustment was also related to instructional language background (F=3.21, p=.0133). Those whose instructional language background was Spanish had a significantly lower social and cultural readjustment score than those whose official language background was French.

Then, too, professional and educational readjustment was related to instructional language background (F=3.12, p=.0153). Respondents whose instructional language background was Spanish had a significantly lower professional and educational score than those whose official language background was French.

In addition, national and political readjustment was related to instructional language background (F=3.19, p=.0138). Respondents whose instructional language background was Portuguese had a significantly lower national and political readjustment score than those whose instructional language background was either Spanish or French.

Finally, cumulative readjustment was related to instructional language background (F=3.41, p=.0095). Those whose instructional language background was French had a significantly higher readjustment score than those whose instructional language background was either Portuguese or Spanish.

Home Job Situation

The variable, national and political readjustment, showed a significant relationship to job assurance (F=9.71, p=.0020). Those who had a job assured upon return home had a significantly lower national and political readjustment score than those who did not have a job assured them.

National and political readjustment was related to immediate employment (F=15.97, p=.0001) as was cumulative readjustment (F=6.56, p=.0108). Those who had immediate employment had significantly lower national and political readjustment and cumulative readjustment scores than those who did not have immediate employment.

None of the variables showed a relationship between life satisfaction, readjustment, and employment in field of training.

Age

Those respondents who were 20-25 years old had a life satisfaction score significantly higher than either those who were 31-35 or those who were 36-50. Those who were 26-30 had a life satisfaction score significantly higher than those who were 31-35. None of the other variables of social and cultural readjustment, professional and educational readjustment, or national and political readjustment were related to age.

Previous International Experience

None of the variables were related to previous international experience.

Length of Stay in the U.S.

Life satisfaction, social and cultural readjustment, professional and educational readjustment, and cumulative readjustment were not related to length of sojourn. National and political readjustment was related to to length of sojourn (F=2.95, p=.0126). However, no two groups differed significantly.

Self-perceived Command of the English Language

Life satisfaction, social and cultural readjustment, professional and educational readjustment, and cumulative readjustment were not related to self-perceived command of the English language. However, national and political readjustment was related (F=3.19, p=.0423). Those respondents who were "not competent, barely competent, or somewhat competent" had a significantly lower national and political score than those who were "competent" in self-perceived command of the English language.

Size of School Attended in the United States

None of the variables were related to size of school attended.

Participation in Reentry Program

Life satisfaction, professional and educational readjustment, and cumulative readjustment were not related to participation in a reentry program; however social and cultural readjustment was related to participation in a reentry program (F=5.82, p=.0163). The average social and cultural readjustment score for those respondents who participated in a reentry program was significantly higher than for those who had not participated in a reentry program. National and political readjustment was related to participation in a reentry program (F=4.67, p=.0313). The average national and political readjustment score for those respondents who participated in a reentry program was significantly higher than for those who had not participated in a reentry program.

Primary Sponsorship

Life satisfaction was related to primary sponsorship (F=4.44, p=.0045). Respondents who were primarily sponsored by USAID had a significantly lower life satisfaction score than those who where primarily sponsored by either their home government or by self/family. Social and cultural readjustment was not related to primary sponsor. Professional and educational readjustment was related to primary sponsorship (F=2.89, p=.0353). Those who were primarily sponsored by USAID had a significantly higher professional and educational readjustment score than those who were primarily sponsored by their home government. National and political readjustment was related to primary sponsorship ($F=6.83$, $p=.0002$). Respondents who were sponsored primarily by self/family had a significantly higher average national and political readjustment score than those who were sponsored primarily by either their home government or by USAID. Cumulative readjustment was also related to primary sponsorship ($F=4.01$, $p=.0079$). There was a significant difference between respondents who were sponsored primarily by self/family and those who were sponsored primarily by their home government.

Marital Status

Life satisfaction was related to marital status ($F=13.22$, $p=.0003$). The average life satisfaction score of the single respondent was significantly higher than the average life satisfaction score of the married student. The other variables of social and cultural readjustment, professional and educational readjustment and national and political readjustment were not related to marital status.

Level of Degree Earned

Life satisfaction, social and cultural readjustment, and national and political readjustment were not related to level of degree earned. Professional and educational readjustment was related to level of degree earned ($F=3.51$, $p=.0308$). Those who had received a bachelor's degree had a significantly higher professional and educational readjustment score than those who had received a doctorate. Cumulative readjustment was also related to level of degree earned ($F=3.74$, $p=.0245$). Respondents who had received a doctorate had a significantly lower readjustment score than respondents who had received either a bachelor's degree or a master's degree.

Self-perceived Quality of Education

None of the variables were related to self-perceived quality of education.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn.

Life Satisfaction

1. Pre-departure international students were more highly satisfied with their lives than post-departure international students.
2. Single international students had greater life satisfaction than married international students.
3. International students from Central America had greater life satisfaction than those from South Asia
4. International students sponsored by family/self or by their home government had greater life satisfaction than those students who were sponsored by USAID.
5. Younger international students had greater life satisfaction than older international students.
6. Those students with a Spanish official or educational language background had greater life satisfaction than those with an English or French language background.

Social and Cultural Readjustment

7. International students with an English official language background had greater social and cultural readjustment than those from either a Spanish or French language background.

8. Those students with a French educational language background had greater social and cultural readjustments than those with a Spanish background.

9. International students who had participated in a reentry program had greater social and cultural readjustment than those who had not participated in a reentry program.

Professional and Educational Readjustment

10. International students sponsored by USAID had greater professional and educational readjustment than those sponsored by their home government.

11. Those students with a French official or educational language background had greater professional and educational readjustment than those from a Spanish language background.

12. International students who had earned a bachelor's degree had greater professional and educational readjustment than those who had earned a doctorate degree.

National and Political Readjustment

13. International students who did not have a job assured them upon their return home had greater national and political readjustment than those who had a job assured them.

14. Those students who were not employed immediately upon their return home had greater national and political readjustment than those students who were employed immediately upon their return home.

15. Students sponsored by family/self had greater national and political readjustment than students sponsored by their home government or by USAID.

16. International students with a French or Spanish official or educational language background had greater national and political readjustment than those with a Portuguese official or educational language background.

17. International students who were competent in the English language had greater national and political readjustment than those who were not competent.

18. Students who participated in a reentry program had greater national and political readjustment than those who had not participated.

Cumulative Readjustment

19. International students sponsored by family/self had greater cumulative readjustment than those who were sponsored by their home government.

20. Students from a French official or educational language background had greater cumulative readjustment than those from a Portuguese or Spanish language background.

21. International students who had earned a bachelor's or master's degree had greater cumulative readjustment than those who had earned a doctorare degree.

RECOMMENDATIONS

The following recommendations are based on the findings of this study:

1. A summary of the findings should be made available to international students in agriculture who are from a developing country and also to those

individuals responsible for counseling these students (e.g. representatives of home country institutions, U.S. institutions of higher education, and sponsoring agencies).

2. Students who anticipate difficulty in areas of readjustment and life satisfaction addressed in this study should be given category-specific assistance to minimize problems of readjustment and to enhance life satisfaction.

The following recommendations for further research are based on the findings and conclusions of this study, and upon the experiences encountered by the researchers during the course of the study:

1. This study should be replicated with international agricultural students who are or have attended other colleges or universities to determine if the findings of this study are also true for international students in agriculture at or from other U.S. institutions.

2. This study should be replicated on a longitudinal basis to compare the perceived future readjustment and life satisfaction of international agricultural students with their actual readjustment and life satisfaction.

3. In replicating the study, the optional question requesting the name and address of the respondent should be made more explicit so that the respondent would include the home country mailing address rather than the U.S. address.

4. In replicating this study, it would be advisable to use USAID and/or USDA sources of information on locations and addresses of contract students because of the potential for obtaining more accurate information.

5. In replicating this study, it would be advisable to have a source of funding in-hand well in advance. The study was costly and the cost of follow-up on the returned international students was particularly prohibitive.

6. It is recommended that further research be conducted to:
   a. Determine why country of origin is related to life satisfaction, social and cultural readjustments, professional and educational readjustments, and cumulative readjustment.
   b. Determine why official and instructional language background is related to life satisfaction, social and cultural readjustment, professional and educational readjustment, national and political readjustment, and cumulative readjustment.
   c. Determine why age is related to life satisfaction.
   d. Determine why marital status is related to life satisfaction.
   e. Determine why primary sponsorship is related to life satisfaction, professional and educational readjustment, national and political readjustment, and cumultive readjustment.
   f. Determine why participation in reentry programs is related to social and cultural readjustment, and national and political readjustment.
   g. Determine why level of degree earned is related to professional and educational readjustment, and cumulative readjustment.
   h. Determine why job assurance, self perceived command of English, and length of sojourn are related to national and political readjustment.
   i. Determine why immediate employment is related to national and political readjustment, and to cumulative readjustment.
   j. Determine what respondents meant by participation in "reentry" programs.
   k. Determine if there is a difference in the life satisfaction and readjustment of those employed by their home government and those employed in private industry.

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DEVELOPMENT AND EXPERIMENTAL EVALUATION OF A MICROCOMPUTER BASED SOFTWARE PACKAGE FOR RECORDKEEPING IN SOE

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INTRODUCTION/NEED FOR THE STUDY

A wide variety of instructional materials exist for use in vocational agriculture classrooms. Some is effective in producing desired results, but much is less effective. Due to the advent of microcomputers and associated technology, computer software has become common in educational settings. The proliferation of "high tech" instructional materials has not been matched by evaluation to determine the effectiveness in producing desired learning outcomes.

Several agricultural educators have posited that merely developing, distributing and implementing instructional materials is not adequate (Briers, 1978; Briers and Williams, 1978; Gliem, 1976; Kaas, 1976; Ridenour, 1965). The effectiveness of instructional materials is unknown until a thorough and systematic evaluation is conducted to ascertain with certainty whether or not the materials are capable of producing desired learning outcomes for students in vocational agriculture. Therefore, the intent of this study was to conduct a systematic evaluation of a software package (Wood, 1984) which was developed by the researcher for keeping records of supervised occupational experience (SOE) programs.

OBJECTIVES OF THE STUDY

The objectives of the study were to:

1. determine the effectiveness of the computer based SOE recordkeeping system as evaluated by:

   a. student attitude toward SOE recordkeeping

   b. student knowledge of SOE recordkeeping

   c. teacher attitude toward SOE recordkeeping

2. determine teacher perceptions regarding the quality and value of the computer based SOE recordkeeping system.

Research Hypotheses

The following research hypotheses were tested to accomplish the objectives of the study and to determine the effectiveness of the microcomputer based recordkeeping program for SOE:

Ho1 : There is no significant difference between SOE Attitude Inventory scores of students in the experimental and control groups.

Ho2 : There is no significant difference between SOE Knowledge Inventory scores of students in the experimental and control groups.

Ho3 : There is no significant difference between SOE Attitude Inventory scores of teachers in the experimental and control groups.

METHODS AND PROCEDURES

Design and Sample

The study was conducted during the fall, 1984, to determine the effectiveness of a microcomputerized SOE recordkeeping package for agricultural students in New York state. Effectiveness was determined by (1) student attitude toward SOE recordkeeping, (2) student knowledge of SOE recordkeeping, and (3) teacher attitude toward SOE recordkeeping. The pretest-posttest control group design was used for the research. Two treatment levels were utilized: (1) students (n=218) and teachers (n=8) were provided the microcomputerized recordkeeping package (experimental group), and (2) students (n=217) and teachers (n=7) were not given the micrcomputerized recordkeeping package, but maintained their present recordkeeping activities (control group). Students in grades nine through twelve were included in the study.

The population of New York agriculture teachers was identified from data collected through a Cornell based study (Berkey and Sutphin, 1984) which identified agriculture teachers who were users of microcomputers for instructional purposes.

The population consisted of all agriculture teachers in New York state during 1983-84 school year that met the following criteria:

1. Agriculture teachers who were using Apple microcomputers in their instruction.

2. Agriculture teachers who were teaching at a central school in New York state (as opposed to a BOCES).

3. Agriculture teachers who were teaching SOE as a part of the regular agriculture curriculum.

4. Agriculture teachers who include Farm Production and Management as their specialization within agriculture.

5. Agriculture teachers who were willing to implement a computerized SOE recordkeeping system as part of their instruction concerning SOE.

Experimental Group

Copies of the microcomputerized SOE recordkeeping package were mailed to the agriculture teachers assigned to the experimental group. Teachers were not provided with inservice on the package, but were given guidelines for use.

Inservice was purposefully omitted inasmuch that it rarely is a part of curriculum development and it would tend to overly sensitize the teachers in the experimental group to the nature of the study. It was therefore decided to omit any inservice, and to rely on suggested guidelines for use and to let the microcomputerized recordkeeping package be the fundamental treatment.

Control Group

Teachers assigned to the control group were not given the microcomputerized SOE recordkeeping package. Instead, they were asked to administer their SOE recordkeeping program as they normally would. They were then asked to collect data from their students prior to any recordkeeping activities (pretest) and after a designated time span in which they adminster recordkeeping activities (posttest).

Monitoring of Treatment

To insure that the treatment was being properly adminstered within the constructs of the research, the experimental and control groups were monitored during the experiment through telephone conversations. Each teacher was telephoned a minimum of three times to assess their progress in administering the treatment. On-site visits were also conducted at three schools; two in the experimental group and one in the control group to enable the researcher to observe the treatments being used.

Instrumentation

A series of research instruments were designed to measure the dependent variables and to elicit personal and situational characteristics of the sample units.

Six instruments were developed to measure the dependent variables and to record personal and situational information from the teachers and students. Three instruments were used: Student Data Related to SOE Programs in Agriculture, SOE Attitude Inventory, and, SOE Knowledge Inventory were designed to be completed by students under the direction of their agriculture teachers, and three instruments: Teacher Data Related to SOE Programs in Agriculture, SOE Attitude Inventory, and, SOE Recordkeeping Evaluation Form were used to collect data from the teachers involved in the research. The development of the instrumentation is described in the following paragraphs.

SOE Attitude Inventory: To measure each students' attitude toward SOE recordkeeping, an instrument was developed consisting of sixteen statements. The instrument consisted of attitudinal concepts concerning SOE recordkeeping each statement was bound by an attitudinal scale, ranging from "strongly disagree" to "strongly agree". Students were asked to express their opinions concerning each statement using the following scale:

Strongly Disagree   Disagree   Agree   Strongly Agree
1-----------------2---------------3-----------------4

The test was administered as a pretest and as a posttest, with the items randomly arranged for each administration. To insure face and content validity, the test was typed and reproduced similar in design to a common teacher constructed test and in addition, the SOE inventory was reviewed by a panel of experts and was field tested with a group of agricultural students not involved in the study. The field test resulted in a reliability coefficient alpha of .8072 and .7844, for the pre- and posttest respectively. Mean summative scores were 47.007 for the pretest and 45.497 for the posttest administration.

SOE Knowledge Inventory: A criterion referenced examination including fifteen multiple choice items, each with four alternatives to access the students' knowledge level of SOE recordkeeping was developed. A review of the literature, the investigators experience, and a panel of experts determined the content of the test. To insure face and content validity, the knowledge assessment was constructed to resemble a teacher made test and, it was field tested using agricultural students not involved with the research. The knowledge inventory field test resulted in a mean score of 6.412 for the pretest and 7.228 for the posttest. Reliability coefficient alpha scores were .7153 and inventory.

Student Data Related to SOE Programs in Agriculture: The instrument was designed to collect data concerning personal and situational variables of the students participating in the study. The instrument was administered as a pretest. The findings were reported as frequencies.

Teacher Data Related to SOE Programs in Agriculture: The instrument was developed to collect situational and personal data fropm the teachers participating in the study. Thje instrument was field tested using teachers not included in the study. Revisions based on the field test were made. Findings were reported as frequencies.

Teacher SOE Attitude Inventory: To measure teachers' attitude toward SOE recordkeeping, an attitude assessment was developed. The teacher attitude inventory was identical in content to the student attitude inventory form. The instrument was field tested to insure content and face validity and yielded a reliability coefficient alpha score of .9074 and .8609 respectively for the pre- and posttest and a mean summative score of 49.805 and 50.182 for the pre- and posttest respectively.

SOE Recordkeeping Software Evaluation Form: This form was developed to access the agriculture teachers' perceptions of the value of the computerized SOE recordkeeping software. Means and standard deviations were reported.

A panel of experts, considered to be knowledgeable of SOE programs and recordkeeping were asked to review to instrumentation prior to field testing.

DATA SOURCES

Data were collected through a series of research instruments that were tested for validity and reliability in a pilot study. Administration of the data collection instrumentation was conducted by the agricultural teachers participating in the study.

The teachers were randomly assigned to the experimental or control treatment levels. Chi-square and t-test analyses were utilized to determine if randomization was successful in selecting the experimental and control groups.

Pretest observations of: (1) student and teacher personal and situational variables, (2) student and teachet attitude toward SOE recordkeeping, and (3) student knowledge of SOE recordkeeping were made prior to the experimental instruction.

At the termination of the 10 week experiment, posttest observations were made concerning (1) student and teacher attitude toward SOE recordkeeping, (2) student knowledge of SOE recordkeeping, and (3) teacher assessment of the microcomputerized SOE recordkeeping package. The data were then analyzed using the computing facilities at Cornell University.

The effectiveness of the SOE recordkeeping program was tested using the independent t-test. Alpha, $\underline{p} < .05$ was set apriorally.

RESULTS AND CONCLUSIONS

As illustrated in Table 1 and Table 2 the student control group scored higher on two dependent variables on the pretest measure. This indicated a greater aptitude in terms of SOE knowledge and a slight, though not statistically significant more favorable attitude toward SOE recordkeeping.

An SOE attitudinal change was detected from pretest to posttest which favored the experimental treatment group. The change was not found to be statistically significant however, thus the null hypothesis Ho1 regarding SOE attitude was accepted. A decrease in SOE attitude scores as measured by the SOE Attitude Inventory was indicated by the experimental and control treatment groups. The decrease in attitude was not as great in the experimental group though.

The experimental group produced a higher increase than the control group on the SOE Knowledge Inventory adminstered posttest, though this was not found to be statistically significant. Therefore, sufficient evidence exsisted to enable the researcher to accept the null hypothesis Ho2 regarding SOE knowledge.

Teacher attitude toward SOE recordkeeping was found to be similar between treatment groups based on the pretest measure, which slightly favored the control group. Posttest measures of teacher attitudes revealed a more favorable attitude toward SOE recordkeeping by the experimental treatment group, however this was found not to be statistically significant. Thus the null hypothesis Ho3 was accepted.

Table 1. Means, standard deviations, and t-values for student SOE attitude inventory scores

Group	SOE Attitude Mean	 s.d.	d.f.	t-value
Experimental group pretest	46.3807	6.8228	13	0.326
Control group pretest	47.6479	8.2361		
Experimental group posttest	45.5046	6.4137	13	0.004*
Control group posttest	45.4885	6.2421		

* Test of Ho1

Table 2. Means, standard deviations, and t-values for student SOE knowledge inventory scores

Group	SOE Knowledge Mean	 s.d.	d.f.	t-value
Experimental group pretest	6.0461	2.6154	13	0.523
Control group pretest	6.7788	2.838		
Experimental group posttest	7.6313	3.535	13	0.468*
Control group posttest	6.8249	3.088		

* Test of Ho2

Table 3. Means, standard deviations, and t-values for teacher SOE attitude inventory scores

Group	SOE Attitude Mean	s.d.	d.f.	t-value
Experimantal group pretest	49.6239	4.359	13	0.125
Control group pretest	49.9862	6.711		
Experimental group posttest	51.7500	4.166	13	1.323*
Control group posttest	47.8571	7.058		

* Test Ho3

Perhaps a more important measure of the SOE recordkeeping software was the evaluation provided by the teachers in the experimental group. The teachers, after utilizing the SOE software in their curriculum, rated twenty statements using a four point likert scale concerning the quality and value of the program.

Teacher perceptions regarding the quality and value of the computer based SOE recordkeeping system indicated that overall, the software is easy to use, well documented, efficient and effective. Procedures for revising student entries was rated lowest by the teachers. The teachers in the experimental group were then asked to respond to five open-ended questions regarding the noteworthy strengths and weaknesses of the program and if they would recommend the use of the software to others. There was a concensus among the teachers for recommendation of the software to others. In no instance did a teacher indicate they would not recommend the use of the program. Data found in Table 4 indicate means and standard deviations of the software evaluation by teachers in the experimental group.

Table 4. SOE software evaluation by teachers (n=8)

Item	Mean	s.d.
1. Clarity of direction	3.10	.568
2. Consistency of directions	3.40	.267
3. Style/language of directions	3.10	.568
4. Readability of screen displays	3.30	.675
5. Attractiveness of screen displays	3.40	.516
6. Readablity of reports	3.70	.675
7. Completeness of report content	3.50	.707
8. Usefullness of information provided by reports	3.60	.516
9. Freedom of need for external directions/information	3.00	.000
10. Usefulness of program (screen) reaction to inappropriate entries	2.90	.316
11. Efficiency of procedures for user to recover from errors	2.60	.516
12. Flexibility of system	2.70	.675
13. Efficiency of procedures for user to control rate/sequence of presentation	3.10	.568
14. Efficiency of procedures to revise entries	2.90	.568
15. Effectiveness of support materials	3.20	.422
16. Comprehensiveness of support materials	3.30	.483
17. Provisions for special (shortcut) features	2.60	.516
18. Operative/response/calculating time of program	3.10	.876
19. Freedom of bias (sex, culture, etc.)	3.80	.422
20. Overall ease of use	3.30	.483

Note: The rating scale was; 1 = Poor, 2 = Fair, 3 = Good, and 4 = Excellent

IMPLICATIONS

This study dealt with student attitude toward, and knowledge of, SOE recordkeeping as effected by two different recordkeeping methods; microcomputer based and non-microcomputer based.

Significant differences between the experimental group and control student groups on SOE attitude and knowledge measures were not evident when treatment, the microcomputer based SOE recordkeeping system developed by the researcher, was utilized. Teacher attitude was not significantly effected by the treatment, however an increase in posttest attitude scores by the teacher experimental group was evident.

Innovative recordkeeping methods and materials can be valuable components of the agriculture curriculum and should not be foregone as result of this study. Rather, it is evident from this study, that current microcomputer technology coupled with the SOE recordkeeping software developed by the researcher can be utilized by teachers and students in agriculture with no apparent delirious effects, either cognitive or affective. This important finding has merit in light of the fact that while the treatment SOE software did not statistically contribute to students' and teachers' increased affective and cognitive gains, it was perceived as a valuable and welcome addition to the agriculture classroom. Though not a causal factor in increasing agriculture students' attitude toward and knowledge of SOE recordkeeping or in increasing teachers' attitude toward SOE recordkeeping, microcomputers, associated technology, and the SOE recordkeeping software should be a part of agricultural instruction concerning keeping records.

Recommendations

It is recommended, based on the findings, that microcomputer technology be linked with SOE recordkeeping and that teachers and students in agriculture maintain the use of current technology and methods.

The findings of this research identified agriculture student and teacher characteristics, and determined differences between experimental and control groups on measures of SOE attitude and knowledge scores. The recommendations contained herein, based on the findings of the research, warrant consideration by administrators, supervisors, teacher educators and instructors who find themselves concerned with the operation of vocational agriculture programs:

1. The microcomputerized SOE recordkeeping program should be used by vocational agriculture students as an aid in keeping detailed, up-to-date and accurate records.

2. The SOE recordkeeping software should be utilized by teachers of vocational agriculture for summarizing student SOE records. This will provide the instructor with important

documentation for demonstrating the scope and importance of student enterprises and experience to interested parties.

3. The microcomputerized SOE recordkeeping program should be used by vocational agriculture students to help improve their accuracy in keeping detailed SOE records, and to a lesser degree to help improve their attitude toward and knowledge of SOE recordkeeping.

4. Current recordkeeping practices (including methods and materials) should not be supplanted by unique, innovative and untested systems, but should be augmented by the addition of the computer based SOE recordkeeping program which has been rigorously and systematically evaluated.

5. Inservice education regarding the use of the SOE recordkeeping software should be made available to vocational agriculture teachers. Additionally, teachers in the preservice agriculture education program should be given instruction on its use.

6. The microcomputerized SOE recordkeeping program should be utilized by agriculture students as an aid in developing computer literacy skills which are vital competencies for graduates of vocational agriculture programs.

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